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INTERNATIONAL LAKE LEVELS COMMISSION.

President Livingstone of the Lake Carriers' Association, ex-President Frank J. Firth and other executive officials of that organization are giving attention to the clause in the river and harbor bill which provides for the appointment of an international commission on lake levels. This is a very important feature of the river and harbor bill. The subject is one that has had the attention of leading vessel men for years past. Mr. Firth has made a special study of it, and his name has been suggested as a member of the commission, but he feels that the commission should be made up on both sides (Canada and the United States) of men free from allegiance to any special interest. He has said also in answer to the suggestion of his name in connection with the commission that the bill provides that the president appoint "one officer of the corps of engineers of the United States army, one civil engineer well versed in the hydraulics of the great lakes, and one lawyer of experience in questions of international and riparian law," so that he would not be eligible for appointment. Mr. Firth, President Livingstone and others have suggested the appointment of Mr. Harvey D. Goulder, counsel of the Lake Carriers, but Mr. Goulder also says that members of the commission should be free from connection with any special interest and that anyhow he is so pressed with other matters that he could not accept the place if it were offered to him. It is understood that Senator McMillan of Michigan favors the appointment of Mr. Geo. Y. Wisner of Detroit as the civil engineer member of the commission. Mr. Wisner is a very capable engineer of special experience in this line. Senator McMillan's position in the commerce committee of the senate will enable him to exert great influence in favor of Mr. Wisner but there may possibly be some objection to that gentleman for the reason that he has been an advocate of a special solution of the lake levels problem and is also connected with the Georgian bay canal project. If Dr. James B. Angel of Michigan University will accept a place on the commission he will very probably have the support of a great many leading vessel owners. He is well versed in international law and is familiar with the questions involved. The Buffalo Merchants Exchange has recommended the appointment of Mr. Geo. Clinton, who is also a lawyer of ability and who has a full knowledge of the subject. The clause in the river and harbor bill providing for the appointment of the commission is as follows:

"That the president of the United States is hereby authorized to invite the government of Great Britain to join in the formation of an international commission, to be composed of three members from the United States and three who shall represent the interests of the Dominion of Canada, whose duty it shall be to investigate and report upon the conditions and uses of the waters adjacent to the boundary lines between the United States and Canada, including all of the waters of the lakes and rivers whose natural outlet is by the River St. Lawrence to the Atlantic ocean; also upon the maintenance and regulation of suitable levels; and also upon the effect upon the shores of these waters and the structures thereon, and upon the interests of navigation, by reason of the diversion of these waters from or change in their natural flow; and, further, to report upon the necessary measures to regulate such diversion, and to make such recommendations for improvements and regulations as shall best subserve the interests of navigation in said waters. The said commissioners shall report upon the advisability of locating a dam at the outlet of Lake Erie, with a view to determining whether such dam will benefit navigation, and if such structure is deemed advisable, shall make recommendations to their respective governments looking to an agreement or treaty which shall provide for the construction of the same, and they shall make an estimate of the probable cost thereof. The president in selecting the three members of said commission who shall represent the United States, is authorized to appoint one officer of the corps of engineers of the United States army, one civil engineer well versed in the hydraulics of the great lakes and one lawyer of experience in questions of international and riparian law, and said commission shall be authorized to employ such persons as it may deem needful in the performance of the duties hereby imposed; and for the purpose of paying the expenses and salaries of said commission the secretary of war is authorized to expend from the amounts heretofore appropriated for the St. Mary's river at the falls, the sum of $20,000, or so much thereof as may be necessary to pay that portion of the expenses of said commission chargeable to the United States."

NAVAL APPROPRIATION BILL.

The naval appropriation bill was taken up in the senate this week. As passed by the house it appropriated $77,619,933. As reported by the committee on naval affairs the amount is increased to $78,166,838. All the amendments reported by the committee were agreed to without comment except the one inserting a provision for the construction of one battleship, one armored cruiser and one gunboat in government yards which went over without action. Additions were made which increased the aggregate appropriation about $1,500,000. Among these additions was an item of $185,000 for the construction of a building at the New York navy yard; also an item of $400,000 for a laboratory building at the Annapolis academy.

Gauge records of the United States lake survey show the following mean stages of water for May, above mean sea-level: Lake Superior, 601.78 ft.; Lakes Huron and Michigan, 579.71 ft.; and Lake Erie, 571.95 ft. These stages show Lake Superior to have been 0.17 ft. lower than during the same month last year, and 0.04 ft. lower than in May, 1895; Lakes Huron and Michigan were 0.70 ft. lower than during same month last year, and at same elevation that they were in May, 1895; Lake Erie was 0.55 ft. higher than during same month last year and 0.38 ft. higher than during May, 1895.

THIRTY-MILLION MARK IN LAKE SUPERIOR COMMERCE.

If there are no radical changes in business conditions before the close of the present season of navigation on the great lakes, the 30,000,000-ton mark in the freight movement to and from Lake Superior will be exceeded. In fact the present rate of traffic through the two canals rather indicates a total movement of 31,000,000 to 32,000,000 tons, compared with 28,403,065 tons in 1901; 25,643,073 tons in 1900; 11,214,333 tons in 1892, ten years ago; and only 2,029,521 in 1882, twenty years ago.

The traffic last month (May) aggregated 4,425,659 tons, and for the season thus far (to June 1) the total is 6,764,893 tons, as against 2,248,045 tons to June 1 a year ago, and 4,565,879 tons to June 1, 1900. The combined traffic of United States and Canadian canals at the Sault to June 1 for three years past is shown in detail in the following tables:

MOVEMENT OF PRINCIPAL ITEMS OF FREIGHT TO AND FROM LAKE SUPERIOR.

ITEMS.	To June 1, 1902.	To June 1, 1901.	To June 1, 1900.
Coal, anthracite, net tons	96,521	107,168	155,082
Coal, bituminous, net tons	940,645	360,086	724,958
Iron ore, net tons	4,458,312	1,172,532	2,733,525
Wheat, bushels	18,761,176	5,959,542	14,216,221
Flour, barrels	1,570,438	921,573	1,194,183

REPORT OF FREIGHT AND PASSENGER TRAFFIC TO AND FROM LAKE SUPERIOR, FROM OPENING OF NAVIGATION TO JUNE 1 OF EACH YEAR FOR THREE YEARS PAST.

EAST BOUND.

ITEMS.	Designation.	To June 1, 1902.	To June 1, 1901.	To June 1, 1900.
Copper	Net tons	18,780	8,996	19,423
Grain, other than wheat	Bushels	3,094,500	2,811,928	2,383,301
Building stone	Net tons	7,101	4,280	2,396
Flour	Barrels	1,570,438	921,393	1,194,073
Iron ore	Net tons	4,458,312	1,172,532	2,733,525
Iron, pig	Net tons	4,440	2,689	2,744
Lumber	M. ft. b. m.	176,957	87,792	120,832
Silver ore	Net tons	.....	.....	.....
Wheat	Bushels	18,761,176	5,959,542	14,216,221
Unclassified freight	Net tons	10,348	4,098	8,364
Passengers	Number	4,850	2,949	1,723

WEST BOUND.

Coal, anthracite	Net tons	96,521	107,168	155,082
Coal, bituminous	Net tons	940,645	360,086	724,958
Flour	Barrels	.....	180	110
Grain	Bushels	.....	23,530	.....
Manufactured iron	Net tons	20,294	7,942	24,838
Salt	Barrels	104,223	99,346	67,217
Unclassified freight	Net tons	106,391	63,347	77,603
Passengers	Number	5,974	3,842	1,730

SUMMARY OF TOTAL FREIGHT MOVEMENT IN TONS.

	To June 1, 1902.	To June1, 1901.	To June 1, 1900.
West bound freight of all kinds, net tons	1,179,458	553,864	992,651
East bound freight of all kinds, net tons	5,585,435	1,694,181	3,573,228
	6,764,893	2,248,045	4,565,879

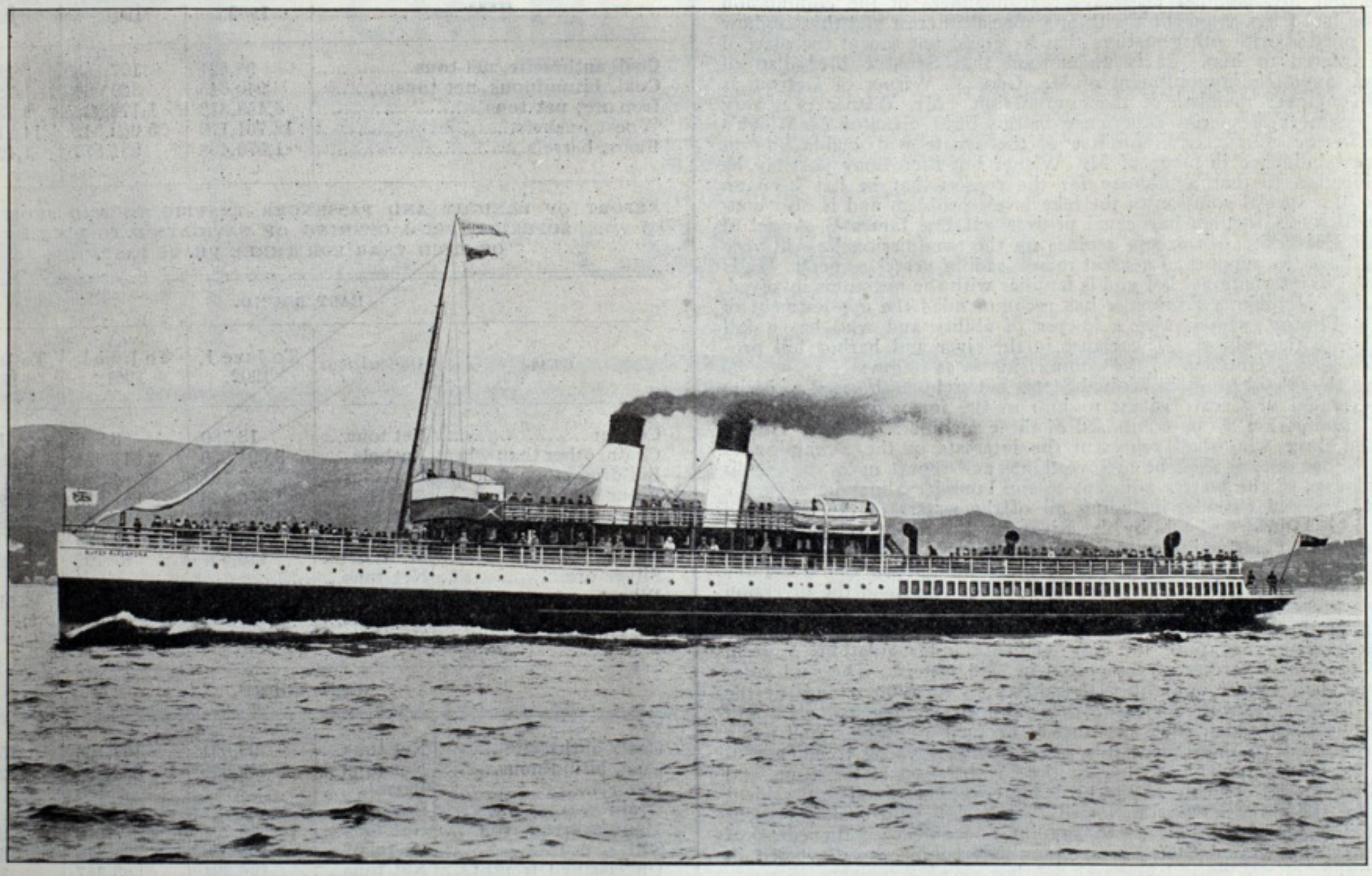
Total number of vessel passages to June 1, 1902, was 4,604, and the registered tonnage 6,276,044.

It is quite improbable that there is anything whatever in the various reports which have been published in the newspapers regarding an all-British combination to meet the Morgan merger. Those who would be most directly concerned in such a combination, and without whose support the combination would be futile, know nothing whatever of the contemplated merging of interests. It is officially announced that Lord Strathcona and Mount Royal, high commissioner for Canada, has received no proposition with respect to Canadian subsidies. At any rate they are not being negotiated for. Lord Rothschild, whose financial assistance would doubtless be sought, knows nothing beyond what he has seen in the newspapers and these reports he is inclined to discredit. Baring Bros., who are intimately connected with mercantile finance, entirely discredit the possibility and advisability of British opposition to the American combination.

THE SHIPPING COMBINE AND SHIP BUILDING.

Glasgow, May 29.—Our ship builders and ship owners are much amused at the bouncing of the German newspapers over the superior position of the two German companies in the shipping combine. To our view they have come out a bad third, and the White Star and Dominion lines are far away on top in the whole deal. They get a very much higher price for their second-hand boats than they could possibly have obtained in the open market, and a large share in the net profits of the conjoined concerns, including a share in the profits of the German companies. As to the sentiment about the "flag" that does not count for much in business, but the English companies preserve their flag quite as much as the German companies do. To be a success, however, the alliance between the Morgan combine and the German companies will (it is thought here) have to be a complete pool of all the earnings, not of the first and second-class fares only. There is naturally much curiosity to know what are the extensions and "new services" pointed at in the German agreement. Meanwhile, rumors of other combines—Transatlantic, African and Chinese—are floating around, and the newspapers make the most "copy" they can out of them. Shipping people do not pay much attention and go on with their business, being content to reserve judgment until facts, not gossip, are in evidence.

There has been some more contracting for new vessels of late and the figures for May are not unfavorable. Denny & Bros. have just booked a big steel screw for the Clan line. William Simons & Co., Renfrew, are to build another large suction-pump dredger for the government of Natal.



QUEEN ALEXANDRA, SECOND TURBINE PASSENGER STEAMER.

Russell & Co., Port Glasgow, are to build an 8,400-ton tank-steamer for the Anglo-American Oil Co., for whom they have just launched one of similar size. This company, it is said, has still need for more steamers and also for some more sailing vessels. A considerable number of second-hand boats have changed hands of late at greatly reduced prices. The cost of building is now just about 30 per cent. less than at the beginning of 1901.

Spain, having lost her colonies, is going largely into shipping. Since the war she has bought quite a large number of new and second-hand ships from us, and now she wants seamen. She has come to us for a unique and interesting vessel which has just been built at the old established yard of Archd. McMillan & Son, Ltd., Dumbarton. This is a finely-modelled, four-masted steel sailing vessel, 300 ft. by 43 ft. by 26 ft. 6 in., capable of carrying 4,000 tons deadweight. This vessel has been specially constructed for the purpose of training officers for the merchant service, and in this connection a large deckhouse aft has been handsomely fitted up for the accommodation of the students, with staterooms, large dining saloon, and suitable lavatory arrangements. The teaching staff are berthed in the poop, where there is also a large lecture room fitted up with all requisites. The navigating staff of the vessel are accommodated in the poop, while the crew's quarters are forward. The vessel has been built to Lloyd's highest class, under special survey, and is fitted with two deep water ballast-tanks capable of holding about 1,500 tons, steam winch, large "Cochran" donkey boiler, etc.

SOME NOTABLE NEW STEAMERS

John Brown & Co., Ltd., Clydebank, have just launched a large twin-screw steamer named the Suffolk, built for the Federal Steam Navigation Co. of London, in accordance with the requirements of the board of trade for a passenger certificate, and to Lloyd's 100 A classification under the three-deck rule, with cellular double bottom, girder framing, deep 'tween decks, and a complete shelter deck all-fore-and-aft. The principal dimensions are: Length between perpendiculars, 460 ft.; beam molded, 58 ft.; depth molded, 34 ft. 3 in.; and gross tonnage about 7,100 tons. A special feature of this ship is the large measurement capacity for cargo and for bunkers as she is intended for the trade between London and New Zealand. For this purpose the whole of the forward holds and 'tween decks are insulated for the carriage of frozen mutton, and are provided with refrigerating apparatus of the carbonic anhydride system of J. & E. Hall, Ltd. The vessel is rigged as a four-masted, fore-and-aft schooner, and is fitted with a complete equipment of powerful winches and derricks and all the necessary gear for the rapid loading and discharging of large cargoes. The propelling machinery consists of two sets of triple-expansion, surface-condensing engines, having cylinders 25 in., 42 in. and 69 in. diameter, with a stroke of 48 in. Steam is supplied by five single-ended steel boilers, 15 ft. 6 in. diameter by 11 ft. 6 in. long, having fifteen furnaces and working at a pressure of 180 lbs. to the square inch, under the Howden system of forced draft.

John Brown & Co. have also recently launched from their yard at Clydebank a beautifully modeled steam yacht of the following dimensions: Length on load water line, 191 ft. 6 in.; breadth, molded, 27 ft.; depth, molded, 14 ft. 6 in.; and tonnage by the Thames rule, 655 tons. This vessel, which is called the Sheelah, is the second of that name built by the same firm for the owner, Mr. W. A. Donaldson, formerly chairman of the Clydebank Ship Building Co. She has been built to Lloyd's classification from the designs of the builders, and forms another handsome addition to the Clyde pleasure fleet. There is a promenade deck of the full breadth of the vessel, extending for about 110 ft. in length. The dining saloon and some of the staterooms are forward of the machinery space, and the owner's private cabins and other staterooms are placed aft of this space; while on the upper deck are large drawing room, smoking room, etc., all beautifully decorated. The yacht is lighted throughout by electricity, for which purpose there is a battery of accumulators in addition to the dynamo and engine equipment, and a powerful searchlight will be carried. The propelling machinery has been constructed by John Brown & Co., and is of the four-cylinder triple-expansion type, carefully balanced so as to reduce vibration to a minimum. Steam is supplied by a large single-ended return tube boiler, giving sufficient power to drive the vessel at a high rate of speed. A noticeable feature is the remarkably short space of time taken in building the vessel and her machinery, the order having only been given at the end of January.

SECOND TURBINE PASSENGER STEAMER.

The second Clyde-built turbine passenger steamer is proving a great success. She is named Queen Alexandra, has been constructed by Wm. Denny & Bros. of Dumbarton, and has gone through her steam trials on the Firth of Clyde. The mean speed attained was 21.63 knots, thus beating the King Edward, built last year by Messrs. Denny (the first commercial steamer to be fitted with the Parsons patent turbine engines) by more than a knot per hour. The Queen Alexandra now ranks as the fastest, as she is the most palatial excursion steamer in Britain. She measures 270 ft. in length, 32 ft. in breadth and 11½ ft. in depth. She has

three separate turbines, each driving its own shaft—the center one high pressure and the two outer ones low pressure. There are five propellers—one on the center shaft and two on each of the other shafts. Reversure turbines for going astern are placed inside the exhaust ends of the low pressure turbine cylinders to reverse the action of the two shafts. The ratio of steam expansion is 125 fold, and at ordinary steaming rate the side shafts perform 1,000 and the center shaft 700 revolutions per minute.

The name of Donald Currie & Co. is, perhaps, better known than that of James Currie & Co. to Americans. Sir Donald Currie, founder of the Union-Castle Mail line, is a brother of the late James Currie, who founded a large line of steamers from Leith to the Continent of Europe. For this line Ramage & Ferguson, Ltd., Leith, have just launched a steel screw steamer, built to the order of James Currie & Co. for their general cargo trade. The principal dimensions of this vessel are 220 ft. by 30 ft. 3 in. breadth molded, by 17 ft. depth moulded; and the engines, made by the builders, are triple-expansion, having cylinders 18½ in., 30 in. and 49 in. diameter by 33 in. stroke, steam being supplied from a large single-ended boiler working up to 165 lbs. pressure. This steamer has been built to the highest class at Lloyd's and is fitted with all the most modern improvements required for such a vessel, including four steam winches, Tait's patent heel traversing gear for derricks, steam windlass, steam steering gear, etc. The Scalpa happens to be the thirteenth vessel built by the same builders for James Currie & Co., and they have at present other two in course of construction for them.

OVER 9,000 TONS OF ARMOR.

The armor required for the new warships will amount to over 9,000 tons. It includes plates of almost every thickness, from 4 in. up to 11 and 12 in., the latter for use in the barbettes for the pairs of 12-in. guns in the new battleships. The main belt is to be of 9 in. on the strake; above this it will be 8 in.; and between the main and upper deck the thickness is 7 in. The 6-in. guns will be separated from each other by armored bulkheads, or traverses, with longitudinal screens behind, forming box batteries. The 9.2-in. guns, mounted separately at the four corners of the citadel, will be within barbettes of 4-in. plating, reinforced by the side armor. Thinner armor plates embraced in the contracts are for the water line at the forward end of the ships. The armor work will be fairly distributed amongst the several firms who have plant for Krupp steel plating, and there will be no difficulty about getting prompt delivery. Some of the firms have plant with which they could easily undertake the completion of the whole 9,000 tons within a year. The contracts will be divided among John Brown & Co., the Vickers-Beardmore combine, the Armstrong-Whitworth Co., and Charles Cammell & Co.

The Challenger, just completed at Chatham dock yard, has been a long time in course of construction, for, although a vessel of only 5,880 tons, representing in her structure a weight of 3,000 tons, it is nineteen months since her keel was laid. There is more hurry for armored cruisers than for this class. The Challenger is an improvement on the Minerva and Hyacinth type, length being 355 ft., and at 20.3 ft. draught the displacement is 5,880 tons. The machinery is by the Wallsend Slipway & Engineering Co. This vessel has two sets of four-cylinder engines with a piston stroke limited to 32 in., completely under the protective deck, and yet the piston speed necessary for the total power of 12,500 is 960 ft., which means 180 revolutions per minute. The Challenger is the largest British warship for which Babcock & Wilcox boilers have been built. The boilers have a heating surface of 30,750 sq. ft., which gives slightly less than 2½ sq. ft. per unit of power.

COMBINATION BOILER SYSTEMS.

The type of boilers for the new armored cruisers has now been decided upon, subject to arrangement with the contractors as to price, and for the changes in the machinery rendered necessary by the reduction in the steam pressure. The various firms are now preparing revised tenders. The original tenders included prices for different boiler systems, including a set for an installation of cylindrical boilers equal to two-fifths of the power, and various water-tube boilers for the other three-fifths; but the combination now decided upon is one-fifth of tank boilers and four-fifths of water-tube boilers. The steam pressure at all the boilers is to be 210 lbs. and the same at the engines; while formerly the boiler pressure was to be 260 or 270 lbs. and 250 lbs. at the engines. This necessitates a larger piston area in each cylinder to ensure the same power for the less pressure; and thus the machinery must be considerably modified.

There were six cruisers ordered. The Antrim, allotted to John Brown & Co., Ltd., is to have Yarrow boilers for 17,600 I.H.P. and cylindrical boilers for 4,400 I. H. P., fitted on the Howden system of forced draft with closed ash pit. The others of the six cruisers will have their tank boilers similarly equipped. One of these is the Roxburgh, to be built and engined by the London & Glasgow Co.; but in this case the Durr water-tube boiler to be fitted. Beardmore & Co.'s cruiser, the Carnarvon, will have the Niclausse boiler for four-fifths of the power and ordinary cylindrical boilers for the other fifth. Scott & Co.'s cruiser, the Argyll, is to have Babcock & Wilcox boilers for 17,600 I.H.P. and ordinary tank boilers for the rest. Thus all of the four Clyde-built cruisers will have distinctive types of boilers.

Of the other two cruisers, that built by Sir W. G. Armstrong, Whitworth & Co. at Elswick and engined by Hawthorn, Leslie & Co. (the Hampshire), will have Yarrow large-tube boilers; but in the case of the cylindrical boilers Howden's system will not be adopted. In the sixth ship, the Devonshire building at Chatham, and to be engined by the Thames Iron Works Co., the Niclausse boiler will be fitted, but the cylindrical boilers will be of the Howden type. In two of the ships Yarrow boilers will be used—in the Brown and Elswick ships; in two others—Beardmore's and Chatham vessels—the Niclausse boiler will be used; in one, the London & Glasgow, the Durr will be adopted; and in the Scott vessel the Babcock. These types of boilers have all been tried in the service. The Yarrow large-tube boiler is fitted in a third-class cruiser recently reboilered at Palmer's. As a small-tube boiler it has been adopted both separately and in combination by several European powers, and it is being fitted to two swift Chilean battleships now being built in this country. The Niclausse boiler has been applied in two sloops, and is being constructed for two vessels of the County class—Suffolk and the Berwick—the latter building at Beardmore's. The Durr boiler has also been fitted to an old third-class cruiser, and is to be fitted to a second-class cruiser, the Encounter, of 12,500 I.H.P. The Babcock boiler is now the most widely adopted type, excepting the Belleville. Harland & Wolff are putting it in the battleship Queen of 18,000 I.H.P.; Hawthorn, Leslie & Co. into the armored cruiser Cornwall of 22,000 I.H.P.; and all three new battleships of the King Edward VII. type are being fitted with this system. In one instance it is in combination with cylindrical boilers. The idea of having one-fifth of the steam power derived from cylindrical boilers is to enable the ship to steam at ordinary cruising rates without resorting to the use of the water-tube generators, and that the new vessels should be able to make 15 knots under these conditions. When higher powers are required, the water-tube boilers will come into use, and they can develop full pressure within a few minutes of fires being lighted.

It is now stated that Russia and France, and also Japan, are going to adopt the large displacement tonnage of the British battleships of the King Edward VII. class, i. e. 16,350 tons, which has only been equalled by the United States. The Russian government has given orders for the preparation of designs for a vessel of 16,000 tons to be laid down at St. Petersburg. Of the French battleships, four are to be laid down almost immediately—one at Brest Dockyard, and the others at private works; and at the same time two armored cruisers are to be commenced, one at L'Orient government works, while the other will be given out to contract, all of increased displacement. Four new battleships for Japan are to be each over 15,000 tons, but contractors will be given an opportunity of submitting alternative designs.

REORGANIZING BOSTON & PHILADELPHIA STEAMSHIP CO.

A plan has been made by the directors of the Boston & Philadelphia Steamship Co. to reorganize the corporation. The recent purchase of wharves in Philadelphia and in Providence, at a cost of $700,000, and the contemplated lengthening of the steamship Parthian at a cost of about $100,000 require an addition to the company's cash capital of about $800,000. Accordingly the directors have taken measures to provide this capital and have just issued a circular to the stockholders setting forth their plans. Since the present charter of the company, granted in 1873, restricts the amount of real estate which it can own to $500,000 in value, and limits its business to two lines, one between Boston and Philadelphia, and one between Providence and Philadelphia, they have been granted by the Massachusetts legislature a charter for a new company, free from both these restrictions. The name of this new company is the Massachusetts Steamship Co., and the directors of the old line recommend that its property and business be transferred to the new corporation, which will subsequently, when the reorganization is accomplished, change its name back to the Boston & Philadelphia Steamship Co. It is planned that the new corporation have a capital of $1,500,000, and that the present Boston & Philadelphia Steamship Co., after declaring a cash dividend of 15 per cent. from past earnings, transfer all its property to the new corporation for $712,600 par value of capital stock. The basis of transfer is one share of stock in the new company for each outstanding share in the old. At the same time each existing stockholder shall have the right to subscribe at par for the additional stock at the rate of one and one-tenth shares in the new corporation for each share held in the old.

In this way the stock of the new corporation will be disposed of as follows: $712,600 par value of new stock issued to present stockholders, share for share; $783,860 par value of new stock issued to present stockholders; 3,540 shares to be sold for the benefit of the new corporation by the directors; total $1,500,000. By such arrangement the new corporation will realize in cash about $787,400 for the improvements contemplated. The directors also recommend that no division of the stock of the new corporation into common and preferred be made. The present stock of the Boston & Philadelphia Steamship Co. consists of $500,000 par value of preferred stock, and $212,600 of common stock. The preferred stock is non-cumulative; and there is no distinction between the two kinds of stock, except as to the payment of dividends when earned up to the rate of 6 per cent. per annum, and except that dividends can be paid upon the common stock but once a year. The market value of both the common and preferred stock of the present company is the same. Rights to subscribe to the new stock will be assignable.

SMOKE CONSUMER FOR RIVER STEAMERS.

The emission of black smoke by river steamers has long been cause for complaint at Clyde pleasure resorts. An attempt is now being made by the Glasgow & Southern Railway Co. to remedy the grievance so far as it has been directed against their fleet. The system adopted on the company's steamers is that of the British Fuel Economizer & Smoke Preventer Co., whose headquarters are in London but whose works are situated at Dunderline. The system is the invention of Mr. John Alves. The principle on which it is based is the conversion of an ordinary furnace into a Bunsen furnace, this object being attained by admitting heated air through a specially-designed cast iron air-bridge or bridges with vertical openings or slots. These slots are narrower at the top than at the bottom, and taper backwards to allow embers or ashes to pass to the ash pan. At the back of the air-bridge is fixed a ½-in. steam pipe with a small perforation opposite every alternate slot in the bridge for the purpose of injecting a very small amount of steam, previously superheated by passing through a specially-constructed superheater, with such force as to draw in sufficient air to convert the furnace into a forced Bunsen. The inside chamber of the bridge is constructed to ensure the air being heated to a high temperature before entering the furnace, and the steam jets split and stir up the finely divided particles of carbon, etc., getting them into a state ready for combination with the oxygen following the jets of superheated steam, the result claimed being a rapid and intimate mixture of the gases with the supporter of combustion. It is further claimed that the prevention of smoke by this system increases the economic value of the fuel and the evaporative power of the boiler. The system has been adopted by the British admiralty at two of the dock yards, and besides its marine application it has been in use for some time in mills, breweries, electric light stations and other land concerns.

The Seaboard Steel Casting Co., Chester, Pa., has just shipped to the Eastern Ship Building Co., New London, Conn., two immense stern castings, known as struts, for the big steamers building at that yard. These great pieces of material weigh upwards of eleven tons each.

GRAND NAVAL MANEUVERS.

Orders for the grand naval maneuvers to take place next winter in the West Indies, in which three squadrons of American warships will participate, were issued by the navy department at Washington this week. They, indeed, provide for war practice on a more ambitious scale than was ever attempted by this government. Fully fifty fighting craft will be engaged, and with the addition of colliers, provisioners, distilling ships and a repair vessel, the fleet will probably be even greater than that which blocked Santiago in the summer of 1898. The orders show that it is intended to have the North Atlantic squadron, the South Atlantic squadron and the European squadron, with all available destroyers and torpedo boats, mobilize at Culebra island, near Porto Rico, or Guantanamo, Cuba, about Jan. 1, 1903. Between the receipt of the orders by the squadron commanders and that time each squadron will be exercised independently so that its officers and crews may be proficient in the more advanced fleet drills and maneuvers which will take place in the West Indies. A tentative list of the fighting vessels to participate is included in the orders. It consists of the following: Battleships Kearsarge, Iowa, Massachusetts, Illinois, Alabama, Indiana and the new Maine, if ready in time; the armored cruiser Brooklyn; the cruisers Olympia, Baltimore, Cincinnati, Raleigh, Albany, Chicago, San Francisco, Newark, Atlanta, Detroit and Montgomery; the gunboats Nashville, Marietta and Machias; twelve torpedo boat destroyers and fifteen torpedo boats; grand total forty-nine. Other fighting vessels may be added to this list. The bureau of steam engineering has been directed to fit up a collier as a machinery repair ship, and the appropriate bureaus will furnish the necessary supply vessels. The maneuvers will last until about March 1, 1903.

Separate instructions were sent to Rear-Admiral Higginson, commanding the North Atlantic naval station; Rear-Admiral Sumner, commanding the South Atlantic station, and Rear-Admiral Crowninshield, commanding the European station, to assemble their vessels at specified points in time to enable them to participate in the exercises. The European squadron will arrive at Gibraltar not later than Nov. 25, and after filling with coal will go to the Cape Verde islands, reaching there by Dec. 10. More coal will be taken at the Cape Verdes, and on Dec. 15, Admiral Crowninshield will report the squadron in readiness to sail. The navy department will then telegraph further instructions.

The vessels of the South Atlantic squadron will assemble at Bahia, Brazil, not later than Dec. 5, and after filling with coal, will be ready to start for the West Indies by Dec. 12. Admiral Sumner's orders direct him to begin at once a system of progressive drills and instructions. The orders to Rear-Admiral Higginson of the North Atlantic squadron are more comprehensive than those to Admirals Sumner and Crowninshield. They furnish an idea of what the navy department expects to accomplish by the maneuvers. Secretary Moody wrote as follows to Admiral Higginson:

"The department will assemble the vessels of the North Atlantic station at Hampton Roads, Va., about Nov. 15, 1902, for the purpose of forming a squadron to proceed to Culebra or other point, and make the necessary preparations for the assembling of the North Atlantic, European and South Atlantic squadrons as a fleet. With this end in view, you will please give such orders as will maintain the present efficiency of the squadron and increase it. Also, you will issue such orders as will insure the readiness of the ships at that time. The instructions in the department's letter of Nov. 2, 1901, and the routine of drills resulting therefrom, will be continued, but the department does not consider that tiresome lectures to enlisted men are advisable, and recommends that any lectures be brief and delivered to petty officers only. Healthy rivalry between divisions and gun crews is believed to be essential, and drills will be held with the idea of inspiring such rivalry. Officers and men will be encouraged to invent appliances to improve the speed of handling ammunition and the speed of loading the guns, but actual time will, in all cases, be taken to insure that an invention is practicable and of advantage over existing devices; and such inventions that prove of value will be reported in detail to the department. Gun pointing will be carried on frequently and in such a manner as to enable the gun pointer to observe the results. It is confidently expected that officers will take that interest in these matters which their gravity warrants, and will keep such personal record of individuals as will enable them to select the best gun pointers and petty officers."

GOLD MEDAL FOR CAPTAIN MAYO.

Secretary Shaw of the treasury department has just transmitted a gold medal to Capt. Elmer F. Mayo of the life saving service of Massachusetts for heroism in saving life. It was Mayo who launched a dory from the barge Fitzpatrick and at the risk of his life went to the rescue of Surfman Ellis who was clinging to an overturned lifeboat. William Mack of Cleveland had been clinging to this lifeboat, too, but he had loosed his hold a moment or two before. Accompanying the medal was a letter, of which the following is a part:

"I transmit herewith a gold life-saving medal awarded you under the provisions of the acts of congress approved June 20, 1874, and May 4, 1882, in recognition of your heroism in saving life from the perils of the sea. On Tuesday, March 11, 1902, about 1 o'clock a. m., the schooner barge Wadena stranded during a northeast gale and heavy sea on Shovelful shoal, off the southern end of Monomoy island, Cape Cod, and her crew were rescued by the men of the Monomoy life-saving station. On the night of March 16 the weather became threatening, and all except five of the persons engaged in lightering the cargo were taken ashore by the tug Peter Smith, which was in the employ of the owners of the barge. The next morning—March 17—Keeper Eldridge received a telephone message from Hyannis inquiring whether everything was all right with the men aboard of her. The wind was fresh from the southeast, and there was a heavy sea running, but the life savers were clearly of the opinion that the condition of the Wadena was not perilous. Of course they could have no knowledge of what was taking place on board, and since she had set a signal of distress there was nothing for them to do but promptly respond. A line was thrown on board and made fast by the persons there, who were in a fever of excitement and apprehension. Four men lowered themselves, one at a time and without mishap, into the boat by means of a rope, but the captain, who was heavy, let go his hold when part way down, and dropped with such force as to break the after thwart, upon which he landed—an extremely unfortunate incident. All five being safely in the surfboat, however, two were placed forward, two aft and one amidships, under an imperative admonition to sit quietly and keep close down in the bottom. In the difficult movement necessary to clear the line of breakers extending from the stern of the vessel and lay a good course for the shore, a part of the surfmen were backing hard on the port oars while the others gave way with full power on the starboard side, but before the turn could be completed a wave of extraordinary size struck the boat with tremendous force and poured a quantity of water into it. Instantly the rescued men became panic-stricken and lost all self-control, not only rising in their places, thereby endangering the stability of the boat, but so laying hold of the surfmen about the neck and shoulders as to preclude the use of the oars with any considerable degree of effectiveness. A mighty wave sprung upon them, and the boat, turning over beneath the shock, speedily drifted into the heaviest breakers. Instantly thirteen men were doomed to a terribly unequal struggle for their lives. Twice the life-savers righted the boat, only to find it each time tumbled bottom side up again in the foam-crested waves that swept completely over their heads, filled their nostrils and almost smothered them.

"You were on board the stranded barge Fitzpatrick, about one-half mile from the Wadena. Instantly you cast about for the means of reaching and rescuing them. The only small boat on the Fitzpatrick was a little 12½-foot dory, wholly unsuitable for so hazardous a venture. There were no tholepins in the dory, nor were there any oars belonging to it, and therefore a few minutes were consumed in getting it ready. An old file or rasp was thrust in for one tholepin and three others were hastily whittled out from pieces of wood, while a couple of oars ill-suited to the great emergency were hunted up. Meanwhile three of the poor fellows on the surfboat gave out and disappeared. Only one remained. With swift dispatch the dory was flung over the side of the barge, and leaping into it you bravely pulled away. Embracing a somewhat favorable opportunity, you crossed the bar, shipping no great quantity of water, and rowed as hard as possible in the direction of the capsized boat, which was barely visible through the heavy mist. When you reached it you found Surfman Ellis clinging desperately to the centerboard, which, fortunately had slipped out so as to give him a fair hold, and you ran alongside close to him, when, to quote your own words, 'he reached out and drew himself into the dory, where he knelt speechless on the bottom and held to a thwart.' Not only by the rescued man but by all competent judges of this extremely gallant act, it is pronounced one of the bravest ever attempted, one person declaring it to be 'the coolest and most heroic ever seen' on that coast. From all the circumstances it would appear that any person less bountifully endowed with courage and extraordinary physical power, or less skillful and resolute, must have met with disaster. That your life was freely imperiled clearly appears. The gold medal of the life-saving service is the highest reward the department can bestow upon you, and I deem it a privilege to act under the law as the medium for its award to so brave a man."

RUMORS OF A RIVAL SHIPPING COMBINATION.

The newspapers during the past week have contained various fugitive articles concerning a proposed British shipping combination to meet the Morgan combination, but nothing of an authentic character regarding any such combination has been published. The reports included the Cunard Steamship Co., Elder, Dempster & Co., the Allan Royal Mail Steamship Co. and the Union-Castle line, with a probable connection with the Canadian Pacific Railway Co. The report is to the effect that Sir Alfred L. Jones is to be the head of the new combination. He was knighted last year for his services in upbuilding England's maritime strength, and has been spoken of as the most energetic organizer in the English shipping trade. He is at the head of the great Elder, Dempster line, running ships to many parts of the world, and was the initiator of the recent line of steamers from London to the British West Indies. With Sir Thomas Sutherland, chairman of the famous Peninsular & Oriental lines, and Sir Christopher Furness, Sir Alfred Jones ranks as one of the three foremost shipping men in Great Britain. Should this combination be formed it would have 203 ships of 1,014,490 tons, as against 118 ships of 881,562 tons in the Morgan combination.

It was reported that Mr. Morgan had offered £11,000,000 for the Cunard company when he began to form his merger. This has been denied. The price, indeed, is utterly absurd. The Cunard company is capitalized at £2,000,000.

Sir Robert Giffen, whose opinion carries great weight in England, advocates extraordinary liberality at the expense of the British taxpayer in favor of shipping. He would have the government pay the present enormous lighthouse dues and suggests meeting subsidy with subsidy in cases where British ships are exposed to unfair competition. He also suggests that lines of steamers flying the British flag be established to connect all ports of the empire with each other and with the center and that subsidized foreign ships be excluded from the coasting trade, except on condition that they are subject to the same rules as British ships in respect to construction, equipment and inspection. Sir Robert points out that the public is deceived in believing that the danger has only just been created by the Morgan combination. The increase in foreign shipping trade to British ports from 1895 to 1900 has been 100 per cent. The increase in British shipping in the same period has only been 10 per cent. For this reason he advocates prompt and comprehensive action.

The Leyland line twin-screw steamer Hanoverian will make her maiden voyage next month, sailing from Liverpool July 19 for Boston. She is 601 ft. long, 60½ ft. beam, and of 14,000 tons burden. There are nine water-tight bulkheads of steel which extend to the upper deck, and the ship is built to Lloyd's highest class, having a cellular double bottom and bilge keels. The staterooms, dining saloon, music room and smoking room are on the upper decks and in the center of the vessel.

When the Kronprinz Wilhelm was launched it was predicted that she would eventually beat the Deutschland. She has now done so on the eastern passage, having just finished the fastest trip easterly on record. She logged to the Eddystone light at an average speed of 23.53 knots. The days' runs were 434, 550, 535, 534, 552 and 490. The Deutschland's best average speed was 23.51 knots.

CONTEMPLATED WITHDRAWAL OF MR. BURTON.

Since the last issue of the Review complications have arisen in the political situation in Cleveland, as far as the republican party is concerned, to cause Mr. T. E. Burton of Cleveland, the chairman of the committee on rivers and harbors in the house of representatives, to announce his intention to withdraw as the republican congressional nominee in the twenty-first Ohio district. The direct reason for his intended withdrawal is the fact that he was not permitted to name the chairman of the republican county committee, or rather that the committee named some one other than the person whom he had selected. The privilege of naming the chairman has usually been the prerogative of the congressional nominee. Contrasted with Mr. Burton's fame as a national legislator and his actual bigness at Washington (for he is one of the foremost and one of the most influential members of congress) it is profoundly astonishing that so petty a thing as the selection of a chairman of a county committee should move him at all. The cause strikes a thinking man at once as not a sufficient reason for the sacrifice of one of the most successful careers in congress, both in promise and fulfillment. One gets no echo in Washington of the petty troubles at home. It would be miserable business indeed were Mr. Burton to withdraw for so wretched a reason. We are inclined to believe that Mr. Burton will not withdraw, but here the wish may be father to the thought. Mr. Burton has been under an unusual strain during the past several months. He has the most arduous job in congress. In our opinion he is feeling the tension of it. A few weeks surcease from toil will serve to restore his accustomed spirits and to cause him to perceive how utterly absurd his withdrawal would be. The Review takes pleasure in reproducing from the New York Evening Post the following estimate of Mr. Burton:

"Mr. Burton's work in congress has long attracted attention. Congressman Powers of Massachusetts remarked, after Burton's last speech: 'I should like to see that man chairman of the ways and means committee.' In fact, Burton's presentations of the river and harbor bills have been long recognized as models in clear and convincing statement. Other committee chairmen have sought to do the same thing with their supply bills, the story of which is ordinarily routine, but has with him been made extremely interesting. The men who now get to the front in public life are really of his type; an economic writer of considerable note, and author of a comprehensive work on financial crises, the first impression he makes is that of the scholar, and this is the correct one. He has stood against the Nicaraguan canal project in former congresses, when it was little short of treason to advocate any caution, and the sheerest mugwumpery to find any merit in the Panama route. The republican party was then in about the position towards the rival canal projects that the democrats have now been left, and by huge majorities the house was ready to pass anything that looked towards cutting the ditch through Nicaragua. With points of order and other parliamentary devices Mr. Burton stemmed this tide, and by cool, logical remarks showed the folly of going ahead with a canal until our international complications were settled or until our million-dollar commission had decided what it was best to do. In the present session he made a short speech announcing that, as the grounds for which he had formerly opposed the canal had been removed, he now withdrew his opposition and should support a properly drawn canal bill. As chairman of the river and harbor committee, his influence has always been on the side of the great and deserving projects and against the frittering away of $30,000 here and $50,000 there on jobs which had little use except to 'jolly' home constituencies. He has opposed irrigation riders by this great bill, and at every stage he has watched the public interests most steadfastly. Considering that the river and harbor bill carries $65,000,000, the importance of having a solid man at the head of this committee cannot be overestimated."

LAKE SHIP YARD MATTERS.

With steel held at high prices and delivery very uncertain, officials of lake ship yards are not expecting many orders for new freighters to take the places of those now leaving the stocks, especially as it would seem that the capacity of the lake fleet is already in excess of requirements. They are expecting orders for special types of boats, however, such as car ferries, passenger vessels, etc., and they say that the volume of work of this kind will probably show up much larger than was expected. Orders for quite a few vessels of this kind have been put off for two or three years past, on account of the urgent demand for large freighters. The American Ship Building Co. booked an order a day or two ago for a large car ferry with W. W. Kaufman, vice-president of the Traverse City & Manistique Railroad Co. The new steamer will be operated between Manistique and Northport. She will be a duplicate of the car ferry Pere Marquette 18, now building at the Globe works of the American company in Cleveland for the Pere Marquette Railway Co. Measurements of the steamer follow: Length over all, 350 ft.; keel, 338 ft.; beam, 56 ft.; depth, molded, 19½ ft. She will have two triple-expansion engines, with cylinders of 22½, 36 and 59 in. diameter and 36 in. stroke. Steam will be furnished by six Scotch boilers, 13 ft. in diameter, 12 ft. long, which will have a working pressure of 175 lbs. to the square inch. The steamer will have four tracks and will carry thirty cars. She is to be ready for the opening of navigation in 1903.

About 1,000 men are still steadily employed at the works of the Craig Ship Building Co., Toledo. Mr. John Craig says that vessels under construction during the past winter will soon be leaving the yard, but his company has reasonable assurance of new orders that will keep the works employed. He says that contracts for two ships that are not to be delivered until 1903 are as well as secured. The steel steamer Chas. Beatty, built for Buffalo and Cleveland parties, and which is especially adapted to lumber trade, has just been completed by the Craig company, and the large freighter Thomas Adams is about ready for launching. The oil tank steamer building for the Sun Oil Co. of Pittsburgh will be completed in August.

Mr. J. C. Gilchrist, vessel owner of Cleveland, says that the report of a new dry dock at Buffalo, to be built in connection with the Bateman, McDougall & Palmer repair plant, in which he lately became interested, is a little premature. He holds a controlling interest, however, in the new Empire Ship Building Co., which has taken over the business of Messrs. Bateman, McDougall & Palmer, and says that important improvements will be made in the works as a result of new capital invested. The old partners in the business will all continue as officials of the new company. Mr. John S. Watterson, who has been elected treasurer and will represent the Cleveland interest, is a son of a well-known Cleveland banker.

NEW SHIP YARD COMBINATION.

Mr. Lewis Nixon of the Crescent Ship Yard, Elizabethport, N. J., has revived the enterprise which was abandoned last fall to consolidate a number of the ship yards of the country. The new venture is not on quite as large a scale as the old one. Partial details regarding the undertaking were given out this week. It will be incorporated under the laws of New Jersey and the name of the concern will probably be the United States Ship Building Co., though it has been suggested to call it the United States Ship Corporation. The latest announcement is that the following concerns will be taken into the new company: Union Iron Works, San Francisco; Bath Iron Works, Bath, Me.; Hyde Windlass Co., Bath, Me.; Crescent Ship Yard, Elizabethport, N. J.; Samuel L. Moore & Sons Co., Elizabethport, N. J.; Eastern Ship Building Co., New London, Conn.; Harlan & Hollingsworth Co., Wilmington, Del.; Canda Manufacturing Co., Carteret, N. J.

The directors will include Charles J. Canda, Lewis Nixon, E. W. Hyde, Henry T. Scott, John S. Hyde, C. R. Hanscom, Irving M. Scott and H. W. Gause. The capital stock will be $20,000,000, equally divided between preferred and common stock. The announcement shows that contracts for construction on hand amount to $36,046,000. Net profits for the next eighteen months are estimated at $2,675,000, and during the next three years, $6,675,000. Annual net profits upon the current business of the yards for repairs, etc., will, it is expected, considerably increase the above estimates and the calculation does not include the economies under combination upon which practical experts assert the net earnings of the concern will be greatly increased. The following further estimates were given out:

Annual average net earnings		$2,225,000
Annual fixed charges, 5 per cent. interest on $16,000,000 first mortgage bonds	$800,000	
Sinking fund	200,000	
		$1,000,000
Balance		$1,225,000
Less annual dividends, 6 per cent. in preferred shares		600,000
Leaving for dividends on common shares, betterment and reserve		$ 625,000
Working capital on hand, Jan. 1, 1902		$2,281,559
Augmented by additional cash working capital provided from public issue		1,500,000
Total		$3,781,559

AROUND THE GREAT LAKES.

Three red stakes on the east bank of the lime kiln crossing cut are now lighted by red float lights alongside of the stakes. These are new lights altogether.

Bartlett & Tinker, Cleveland agents for the Lake Erie Navigation Co., announce that the first sailing of that line for Rondeau and Port Stanley will be Monday, June 16, leaving at 8 a. m. for Rondeau and at 10 p. m. for Port Stanley from dock at 57 River street.

President Livingstone of the Lake Carriers' Association, who kept fully informed regarding the efforts of Major Bixby, United States engineer in charge of the Sault canal, to relieve the blockade of vessels that followed the accident to the international bridge, a few days ago, says that great credit is due that officer on account of prompt action. Immediately following the accident, Major Bixby with Supt. Ripley took charge of the situation and successfully cleared the channel almost a week before it was first thought it could be done.

An accident that will involve considerable expense occurred to the St. Ignace, one of the big car ferries of the Straits of Mackinaw, Tuesday. While loading cars at St. Ignace she capsized and sank in the loading slip. The disaster was caused by loading one side of the ferry with heavy laden cars of iron ore with nothing on the other side to counterbalance the weight. The sinking of the St. Ignace leaves the railroads between the two Michigan peninsulas without the means of transferring their trains across the Straits of Mackinaw. The car ferry St. Marie is in dry dock at Detroit, but if at her station she could not get into the loading slip so long as the St. Ignace is sunk there.

PASSENGER VESSELS BUILT AT DETROIT.

Since 1871 thirty-eight passenger steamers, twenty of them propellers and eighteen sidewheelers, have been built at the works of the Detroit Ship Building Co., and with the exception of one or two of them they are still in service. The Eastern States and Western States, for the new Detroit & Buffalo line, are considered to be the finest products of Detroit, with the Tashmoo, City of Erie, City of Buffalo, City of Cleveland, City of Detroit, Greyhound, City of Alpena, City of Mackinac, Frank E. Kirby, State of Ohio, State of New York, Pennsylvania and City of the Straits following after. Aside from those already mentioned, the Detroit Ship Building Co. has constructed the following passenger boats since 1871: Sidewheelers—Arrow, City of Milwaukee, Idlewild. Propellers—Tionesta, now building at Wyandotte; America, Chicora, Columbia (now nearly completed), Promise, Pleasure, Excelsior, Fortune, F. & P. M. Nos. 1, 2, 3 and 4, Garland, Sappho, Victoria, Wyandotte, Mascot, Michigan, Wisconsin, Ariel and Hope. All of the side-wheelers were designed by Consulting Engineer Frank E. Kirby, of the Detroit Ship Building Co., and all have been successful boats. Among the other successful passenger steamers on the lakes built at plants other than Detroit are: North West and North Land, built at Cleveland; Manitou, South Chicago; Darius Cole, Cleveland; Atlanta, Indiana and Illinois at Manitowoc; Iroquois and Chippewa at Toledo, and the Chicago at Bay City.

RECONSTRUCTED NORTH WEST AND NORTH LAND.

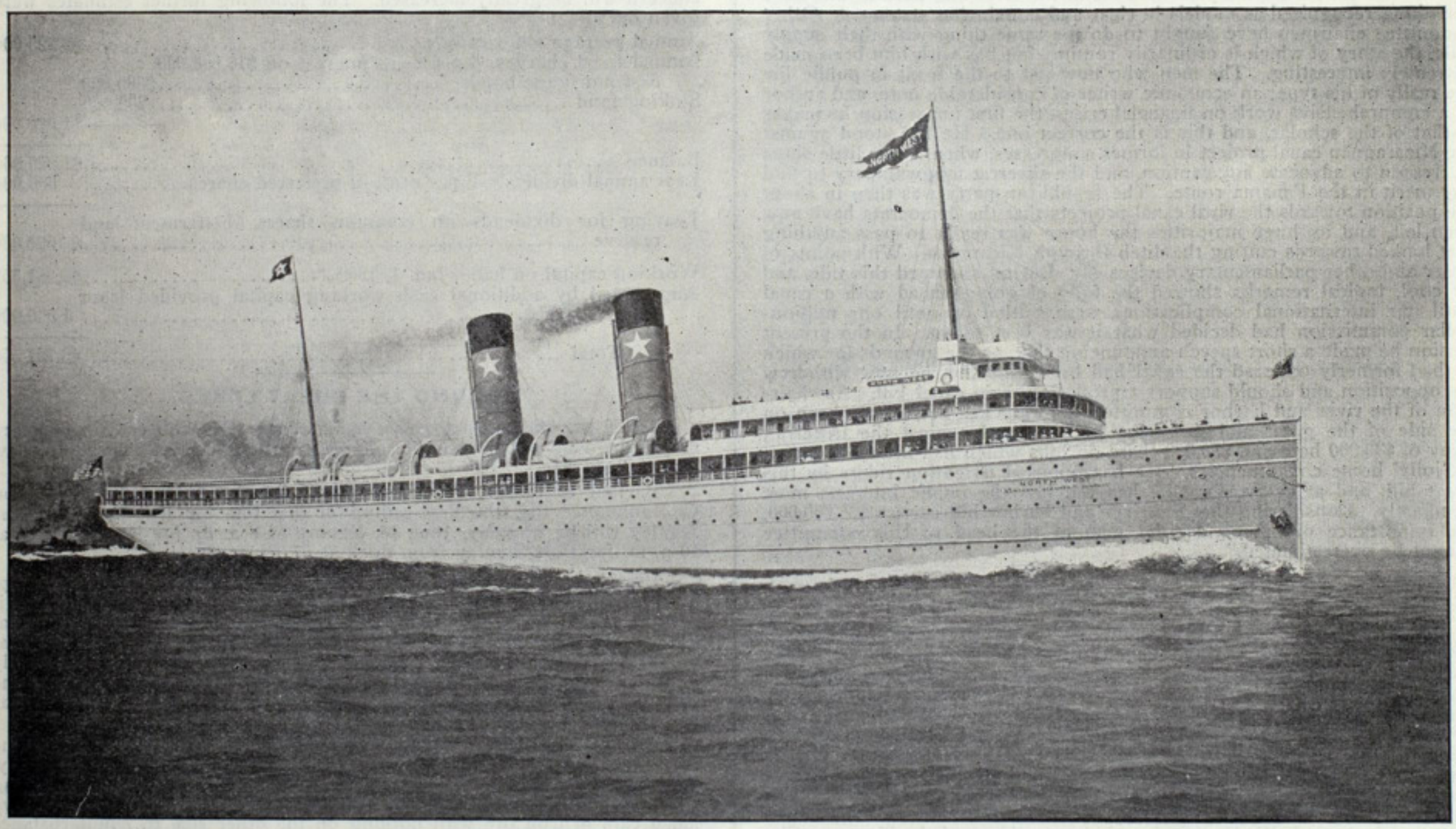
In outward appearance the "crack" passenger steamers of the great lakes, North West and North Land, which are to begin regular service shortly, will not be especially different to what they were a year ago, and yet about half a million dollars has been spent upon them during the past few months. The nautical eye will note the change to two smoke-stacks instead of three, which is the special point of difference. A picture showing the present appearance of the vessels (they are duplicates) is published herewith.

The vessels will this season run in the Chicago-Buffalo trade, stopping at Cleveland, Detroit, Mackinaw island, Harbor Springs and Milwaukee. With new boilers and the additional power which they now have, these steamers will very probably prove the fastest on fresh water, and the work of remodeling them has made them superior to anything afloat in the point of luxurious equipment. This latter statement is based upon the opinion of men who have had to do with the outfitting of the finest Atlantic liners. The most important change is the substitution of Scotch boilers for the water-tube boilers, which have caused a great deal of trouble since the ships were built, and the adaptation of the engines to a boiler capacity of 8,000 H.P., as against 6,400 H.P. heretofore.

The vessels now appear with two stacks, the forward one having been taken out, for the reason that but two-thirds of the room in the hold occupied by the twenty-eight water-tube boilers is now taken up by the ten Scotch boilers installed in each ship. The room taken up by the forward stack, now out, has been used, so far as the main deck is concerned, for additional length in the dining room of the ship, so that now its seating capacity is 250 persons, as against 116 under the old arrangement. An orlop deck has been constructed below the main deck, which conveniently takes care of that portion of the crew which heretofore was lodged on the main deck, and, besides this, it affords additional room for two large engines and dynamos for additional electric energy. The space on the spar deck, heretofore occupied by the forward stack and boiler trunk, has been made over into large parlors finished in red mahogany. The same space on the promenade deck has been used in a similar manner for additional parlor cabin rooms, finished in white mahogany, and an entire new upper deck has been erected above the old cabins on the promenade deck, containing parlor rooms finished in white mahogany. All these parlor rooms, in the new as well as the old part of the ship, are finished in solid mahogany, either white or red, and contain brass bedsteads, hot and cold water and toilets, and many of them connecting bath rooms. All rooms throughout the ship are lighted by electricity, and one of the novel features introduced this season enables a passenger on board the vessel at Chicago or Buffalo to telephone direct from the ship when in port, by long distance telephone, to anyone reached by long distance service.

Another novel and most delightful feature of the reconstructed vessels is an observation promenade deck, 75 ft. long and 34 ft. wide, built directly on a level with the top of the present pilot house. This observation deck is reached by beautifully-constructed winding stairways, built in the center of the ship, so that passengers in order to reach it do not have to go outside of the vessel. Apparatus for ventilation has been reconstructed throughout, so that now the air in the dining room and other parts of the ship will be changed every five minutes. A new smoking room, more commodious than the old one, occupying the after part of the promenade deck, has been constructed and fitted up as an observation room. It will be supplied with the finest of buffet service; this in addition to the men's buffet on the main deck below.

The kitchens have been entirely remodeled and the service supplied by them to the restaurants and cafes will surpass any such service on shipboard. The service will be taken from such hotels as the Holland, Waldorf-Astoria and such famous New York restaurants as Delmonico's, Sherry's and Cafe Martin's. The service in the restaurants will be seventeen hours a day, that is from 6:30 in the morning until 11:30 at night. In addition to the regular "a la carte" service run throughout that time there will be, in the morning, a club breakfast service; at noon a special luncheon service; at night, not only a special a la carte dinner service, but in addition a table d'hote service and later in the evening a luncheon. Music will be furnished by a selected Hungarian orchestra in native costumes. The intention of the management is that these vessels shall not only be the most exquisitely-equipped ships in the world, in every department, but that the service on board shall be the most perfect furnished by the finest hotels in New York.



RECONSTRUCTED NORTHERN LINE PASSENGER STEAMERS—PRESENT APPEARANCE.

SENATOR HANNA ADVOCATES THE PANAMA ROUTE.

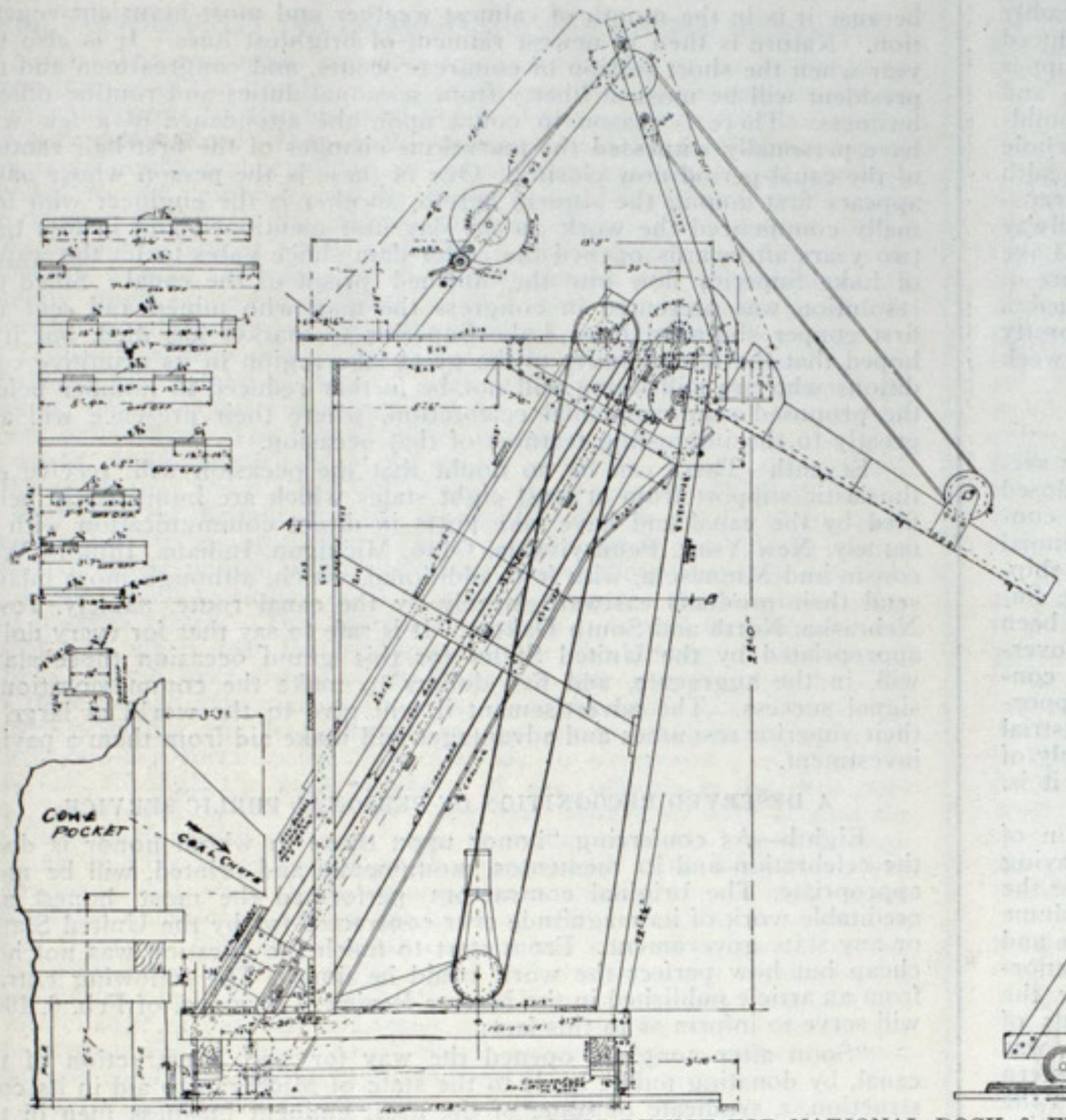
Senator Hanna addressed the senate last week in favor of constructing the isthmian canal on the Panama route. Mr. Hanna maintained that the time had come for the building of a canal. The American people wanted a canal and he shared in their views as to the necessity for it. The question before the country was not whether there should or should not be a canal but on what route the canal should be built. A short time ago there was but one route in the minds of the people, the Nicaragua route. An unexpected circumstance had altered the situation so that there was a choice of routes. The Panama Canal Co. had made an offer to the United States which had made a tremendous change. It had put it in the power of the government to build a canal from the Caribbean sea to the Pacific ocean along the best possible route—the route declared to be the best by the experts commissioned by the United States government to study the question involved in the proper location of the canal. The commission never had had any other opinion than that the Panama route was the best that could be selected. It so stated in the report in which it recommended locating the canal on the Nicaragua route. In that report it favored Nicaragua, not because it considered that the proper route, but because the Panama Canal Co. demanded $100,000,000 for its properties and franchises. Mr. Hanna showed by the testimony taken before the committee on interoceanic canals that if the French offer to sell at $40,000,000 had been before the commission when it made its first report it would have recommended the Panama route at that time.

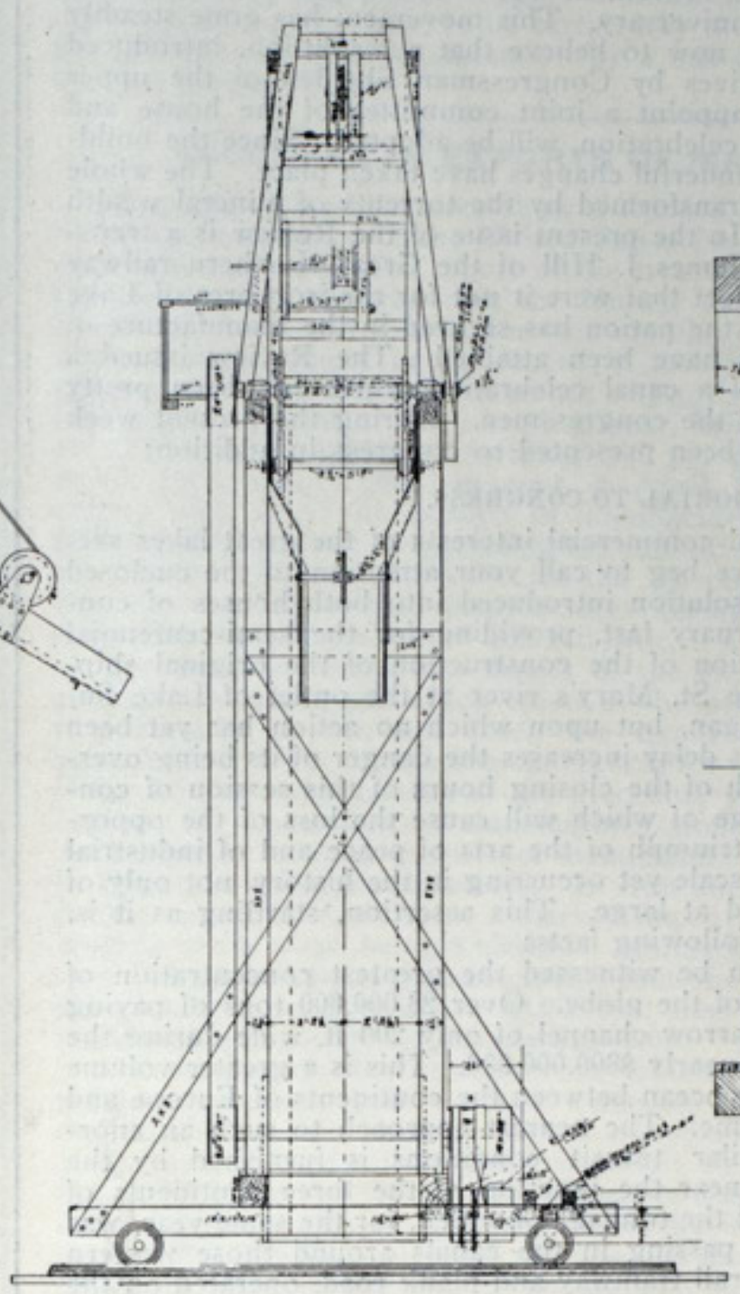
It was evident from the manner in which Mr. Hanna proceeded in his remarks that he had considered the canal question with great care and that he has viewed it as a business man. He insisted that the canal question was a business question and not a sentimental affair. He came to the senate equipped for its discussion as a business man would go to a meeting of directors about to consider a work of large importance involving a vast expenditure of money. A part of his equipment was a series of maps drawn on a grand scale showing the rival canal routes and portions of projected work along the Panama route. One of these maps was so large that it reached from the gallery railing to the senate floor. It was noticeable that on one of the maps all the volcanoes were marked, the active volcanoes being indicated in red and the extinct in black. It was a very unusual thing for such diagrams to be displayed in the senate and they attracted much attention.

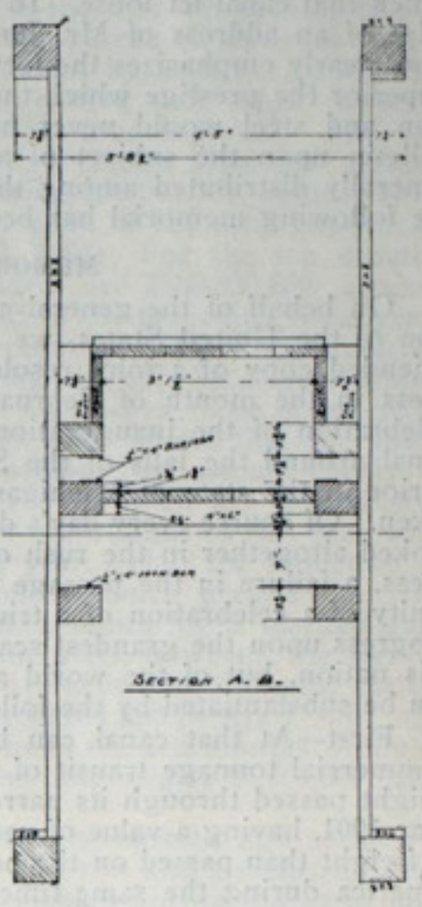
New Cunard docks at Boston are among the best in the country. The dock on the east side is 780 ft. and on the west side 650 ft. long. The sheds which cover the dock are two stories high and have exceptional facilities for passengers and for the inspection of baggage.

NEW COAL LOADING DEVICE.

The Review has several times lately had occasion to refer to the work which the C. O. Bartlett & Snow Co. of Cleveland is doing to facilitate the handling of coal on Lake Erie docks. The company has built a number of devices for putting fuel aboard steam vessels as well as for loading cargo coal, and they are giving excellent satisfaction at various ports. The company has just put in a new coaling device on Whiskey island, Cleveland, for the National Dock & Fuel Co. which has a guaranteed capacity of 300 tons per hour. The device is intended to load







PLAN OF COAL LOADING DEVICE FOR NATIONAL DOCK & FUEL CO., ON WHISKY ISLAND, CLEVELAND.
Built by C. O. Bartlett & Snow Co., Cleveland.

rapidly and effectively the fueling scows of this company and is eminently succeeding in doing so. The device is operated in conjunction with stationary hopper bins which are filled direct from hopper bottom cars. The device or carrier, as it is called, travels under its own power upon a platform directly under the hopper bins. The coal slides from the bins into the base of the carrier and is then conveyed up the carrier and spouted into the fueling scow as may be desired. As soon as one bin is exhausted the conveyor moves to the next upon the platform tracks. The accompanying drawing shows clearly the construction of the carrier.

SHIP BUILDING IN JAPAN.

Consul S. S. Lyon transmits from Hiogo, Kobe, to the state department at Washington a clipping from the Kobe Herald, an English journal at that port, reading as follows:

"The orders which have just been placed in the hands of the Nagasaki Dock Yard & Engine Works and the Kawasaki Dock Yard Co., Ltd., by the Nippon Yusen Kaisha and the Osaka Shosen Kaisha, serve to remind the resident of the rapid development of the ship building industry in this country, while at the same time affording evidence of the growth of the country's mercantile marine. The order placed with the first-named yard is for four large steamers of 6,000, 5,400, 2,500 and 1,900 tons, respectively, the larger vessels being intended for the Japan Mail Steamship Co.'s European and Australian lines. Nor is the Osaka Shosen Kaisha in a different position. This enterprising company also has found it necessary to order new vessels and has found it economical to order them in this country instead of from abroad. The fact is worthy of note, for it is the first time in the history of the country that orders for eight ocean-going steamers have been in hand at one time. This may, we trust, be held to indicate that the shipping and ship building industries are in a healthy and prosperous state. The contrast between the condition of the local ship building trade now and that of a few years back is a striking one. Perhaps the first real impetus given to private ship building here was due to the enterprise of the late Mr. E. C. Kirby, at whose yard at Onohama—the plant of which was subsequently removed to Kure—one large cruiser and several smaller gunboats and steamers were successfully launched. Since then, the yards at Kawasaki, Osaka, Ishikawajima, Uraga and Nagasaki have taken up the work vigorously and demonstrated beyond possibility of cavil their ability to turn out ocean-going craft and large river steamers of the highest standard. With the productions of Osaka and Kobe ship building establishments trading regularly on the Yangtze, and 6,000-ton liners from the Nagasaki Ship Building & Engine Works making record voyages between Seattle and the Orient, and others running regularly between home ports and London, there is no longer room for surprise in viewing Japan-built steamers. There is no doubt that with the opening up of additional lines in the China and Japan seas, sufficient work for local ship builders will be forthcoming for some years to come, and it is therefore unlikely that they will enter into serious competition in the near future with ship building yards in Shanghai, Hongkong and Singapore. The home demand seems likely to engage their activities for some years yet, though the presence of a 700-ton steamer for the Shanghai customs on the stocks at Kawasaki may be held to belie the prediction. This steamer, by the way, is to be launched next month, and the event will serve to signalize that although Japanese ship builders may have quite enough to do in the near future to meet the home demand, a young rival has entered the lists against the great ship building concerns of the west; and this in itself is no small credit to the nation, which is already able to plume itself upon having accomplished more in a generation than any other people in Asia or in the south seas, and as much, relatively, as the American and English peoples whose homes are on the Pacific slope."

SHIP YARD NOTES.

Considerable work is in progress at Howard's Ship Yard, Jeffersonville, Ind. The work in hand includes the following: Freight and passenger steamer Stacker Lee for the Lee line at Memphis, which is to be 225 ft. long, 45 ft. beam and 6 ft. depth; passenger and freight steamer Renown for the Tennessee River Packet Co. of St. Louis, which is to be 200 ft. long, 38 ft. beam and 6 ft. deep; mail and passenger steamer Red Wing for the same company to be 150 ft. long, 28 ft. beam and 4½ ft. deep; steam car float John R. Walsh for the Southern Railway Co. of St. Louis, to be 225 ft. long, 45 ft. beam and 7 ft. deep. The company is also building a ferryboat for the Union Ferry Co. of New Orleans and a landing barge for the Louisville & Jefferson Ferry Co.

The Baltimore Marine Railway Co., Baltimore, Md., launched the new fishing steamer Ardent for the New Gretna Guano Co. of New Gretna, N. J., last week. She has the lightest draught of any of the fishing steamers and was expressly built for service in the inlets which indent the Jersey coast. Her dimensions are: Length, 100 ft.; beam, 22 ft.; depth, 7 ft. She will receive a James Clark & Co. steeple-compound engine. The cabins will be finished in quartered oak and cherry.

The new five-masted schooner H. K. Hall, built by Hall Bros., Port Blakeley, Wash., was launched last week. This is the second schooner with five masts built at Port Blakeley. Her length over all is 243 ft. and she has a carrying capacity of 1,500,000 ft. of green lumber.

The Neafie & Levy Ship & Engine Building Co., Philadelphia, has notified the navy department that the cruiser Denver will be launched at its yard on June 21. Miss Roberta M. Wright, a daughter of the mayor of Denver, will christen the vessel.

Kelley, Spear & Co., Bath, Me., have contracted to build a four-masted wooden schooner of about 600 tons for Capt. F. W. Gorham of Round Point, Me. The craft will measure 165 ft. in length, 36 ft. beam and 13½ ft. in depth.

At Johnson's Ship Yard, Portland, Ore., the stern-wheel tow and passenger steamer Paloma for the Anchor Towing & Lightering Co. was recently launched. The vessel is 102 ft. long, 21 ft. beam and 5½ ft. depth of hold.

The Tacoma Ship Building Co., Tacoma, Wash., will launch in a few days a fast passenger steamer for Capt. A. W. Hoar of Port Townsend, Wash. She is 110 ft. long, 22 ft. beam and 10 ft. depth of hold.

The torpedo boat Wilkes, built by the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, Morris Heights, N. Y., had her trial trip during the present week. She attained a speed of 26½ knots, which exceeded requirements.

SEMI-CENTENNIAL OF SAULT CANAL.

A RESOLUTION TO PROVIDE FOR IT IS NOW IN A FAIR WAY TO BE ADOPTED—MEMORIAL PRESENTED TO CONGRESS.

Some time ago the Review called attention to the fact that the semi-centennial anniversary of the breaking of ground for the construction of the first canal at Sault Ste. Marie, Mich., would occur on June 4, 1903, and to the further fact that a movement had been inaugurated to make a national celebration of the anniversary. This movement has gone steadily forward and there is reason now to believe that a resolution, introduced in the house of representatives by Congressman Shelden of the upper peninsula of Michigan, to appoint a joint committee of the house and senate to provide for such a celebration, will be adopted. Since the building of the first little canal wonderful changes have taken place. The whole face of the world has been transformed by the torrents of mineral wealth which that canal let loose. In the present issue of the Review is a transcript of an address of Mr. James J. Hill of the Great Northern railway who clearly emphasizes the fact that were it not for the iron ores of Lake Superior the prestige which the nation has secured in the manufacture of iron and steel would never have been attained. The Review issued a bulletin upon the subject of a canal celebration which has been pretty generally distributed among the congressmen. During the present week the following memorial has been presented to congress in addition:

MEMORIAL TO CONGRESS.

On behalf of the general commercial interests of the great lakes section of the United States, we beg to call your attention to the enclosed amended copy of a joint resolution introduced into both houses of congress in the month of February last, providing for the semi-centennial celebration of the inauguration of the construction of the original ship-canal around the falls of the St. Mary's river at the outlet of Lake Superior in the state of Michigan, but upon which no action has yet been taken. Of course every day's delay increases the danger of its being overlooked altogether in the rush of the closing hours of this session of congress, a failure in the passage of which will cause the loss of the opportunity of a celebration of a triumph of the arts of peace and of industrial progress upon the grandest scale yet occurring in the history, not only of this nation, but of the world at large. This assertion, startling as it is, can be substantiated by the following facts:

First—At that canal can be witnessed the greatest concentration of commercial tonnage transit of the globe. Over 28,000,000 tons of paying freight passed through its narrow channel of only 200 ft. wide during the year 1901, having a value of nearly $300,000,000. This is a greater volume of freight than passed on the ocean between the continents of Europe and America during the same time. The nearest approach to such an enormous aggregate under similar transit conditions is furnished by the famous Suez canal located near the junction of the three continents of Europe, Asia and Africa, but the tonnage of which, for the same year, was less than one-third of that passing in the canals around those western falls. Fifty years ago a flat rail tramway and plank road, operated on the site of the present canal by a half dozen pairs of horses as the motive power, was quite sufficient to move all the freight then passing to or from Lake Superior. Then not a public highway to the shores of that vast inland sea existed, and the nearest railway was some 500 miles southward. What other section of the globe can show such commercial development and progress as this?

EXAMPLE OF ENGINEERING PROGRESS.

Second—At no other locality on the earth can be seen such a practical example of the strides made in engineering progress between the eighteenth and twentieth centuries as is now exhibited at the falls in St. Mary's river. There has been exhumed on the Canadian side during the last decade the remains of the wooden lock constructed by the Hudson Bay Fur Co. about the year 1790 to facilitate the passage of its "bateaux" around those falls. This, about the year 1812, was broken down by soldiers of the United States army during the war with Great Britain at that time, in an expedition from the United States garrison on the near-by island of Mackinaw and was not repaired afterward. Its dimensions were about 40 ft. long, 10 ft. wide, and 9 ft. lift, and the "bateaux" were towed through it and the rapids which it only partially overcame, by yokes of oxen. Now, within a stone's throw of its site is to be seen a single lock 900 ft. long, 60 ft. wide, and 20 ft. deep, which is filled, or emptied, within five minutes, by the simple pressure of an electric button.

The spectator can here pass with the glance of an eye from the cramped feebleness of engineering ideas in the eighteenth century to the glories of the marvelous achievements in that line of development into which the twentieth century is being ushered into the cycles of human history. As an educator of the intellects of students, especially of the young, who may be inspired to emulate such accomplishments in the next generation, such an exhibition is invaluable and worthy of the fostering aid of an enlightened government.

HISTORIC LOCALITIES.

Third—An exhibition of the great success in converting the former military reservation at the near-by island of Mackinaw into a public park by a transfer of the title from the United States to the state of Michigan for that purpose will be in evidence at the same time. There, historic grounds identified with the earliest explorations and occupation of this continent by civilized nations are preserved and beautified as a blessing and a joy to the present, as well as to coming generations.

Fourth—The ample grounds now occupied as an army post by the United States near the canal afford special facilities for a military display at the semi-centennial celebration. The president of the United States can be provided with suitable quarters there and can pass in review the thousands of volunteer soldiers from contiguous states who will desire to honor him on that occasion at the head of the army and navy of the nation.

Fifth—Under suitable arrangements the merchant marine can make a display of steamers in procession at that time which will eclipse any spectacle of that kind ever seen in any waters. The early date in the season will enable arrangements to be made to charter the two exclusively passenger steamers North West and North Land which are famous as being the finest specimens of naval architecture ever seen on inland waters, and fully equal in all appointments, except size, to the ocean greyhounds. Their average speed is over 20 miles per hour and a presidential excursion could be made on them around the lakes that would unquestionably be more enjoyable than any trip ever made by the national executive in former years. They could accommodate the members of both houses of congress on such a trip, if used together, and if the amount appropriated for expenses warrant such plan, it should be adopted.

Sixth—The time at which the anniversary occurs is most propitious, because it is in the month of calmest weather and most luxuriant vegetation. Nature is then in newest raiment of brightest hues. It is also the year when the short session of congress occurs, and congressmen and the president will be most at liberty from sessional duties and routine official business. There is reason to count upon the attendance of a few who have personally witnessed the marvelous changes of the first half century of the canal-period now closing. One of these is the person whose name appears first among the signers hereto, another is the engineer who formally commenced the work on the day first mentioned and in less than two years afterwards opened the coffer-dam sluice gates to let the waters of Lake Superior flow into the finished prism of the canal. Since the resolution was presented in congress the man who mined and sent the first copper shipment from Lake Superior to market has died, but it is hoped that the few pioneers of the great lake region in its primitive conditions who are still living will not be further reduced in number before the proposed semi-centennial celebration, where their presence will add greatly to the interesting features of that occasion.

Seventh—There can be no doubt that the occasion will receive enthusiastic support from at least eight states which are immediately benefited by the canal and have lake ports in direct communication with it, namely, New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin and Minnesota, with four additional, which, although more inland, send their products eastward largely by the canal route, namely, Iowa, Nebraska, North and South Dakota. It is safe to say that for every dollar appropriated by the United States for this grand occasion those states will, in the aggregate, add five dollars to make the commemoration a signal success. The advertisement it will give to the world at large of their superior resources and advantages will make aid from them a paying investment.

A DESERVED RECOGNITION OF PERSONAL PUBLIC SERVICE.

Eighth—As conferring "honor upon those to whom honor is due," the celebration and its mementos, monumental and printed, will be most appropriate. The original contractors performed the most honest and creditable work of its magnitude ever contracted for by the United States, or any state government. From start to finish the question was not how cheap but how perfect the work could be done. The following extract from an article published in the Marine Review, Cleveland, of Feb. 6, 1902, will serve to inform as to this fact:

"Soon after congress opened the way for the construction of the canal, by donating public lands to the state of Michigan to aid in its construction, a syndicate of some of the most eminent business men in the country was formed to build it. They took their pay in the public lands donated for that purpose. In order to make the canal first-class they expended over 10 per cent. of the cost of the canal in doing extra work not called for in the contract. It is claimed that the Sault Ste. Marie canal has the unique distinction of being one of the most honorably-executed contracts ever awarded by the national or state governments. It is interesting at this date to note that the government contract called for gates operated by man power backing up against long arms to the lock gates, as those then in use on the Erie canal. The contractors substituted windlass movements at their own cost. The government also would have been satisfied with locks 250 ft. long by 50 ft. wide, but the contractors decided that the same should admit the largest steamers then deemed possible on the lakes and made them 350 by 70 ft. in surface dimensions. Gen. O. M. Poe, late of the army engineer corps, in his report of Dec. 28, 1888, remarks: 'They were magnificent structures in their day and would be still useful if the commerce had not entirely outgrown them.'"

It can also be added that they fulfilled their purposes for over one-third of a century, without a break or necessity for general repairs until the pressure of commerce required greater dimensions. It need hardly be said that men who thus substituted the public weal for private gain were of no ordinary type. They were in fact of the class to whose sterling character and far-seeing enterprise this nation largely owes its present pre-eminence. The Marine Review explains that:

"The contract made by the state of Michigan with the contractors for building the first canal at Sault Ste. Marie, as now on file in the state archives, is an interesting document. The contract was made with individuals of which Joseph P. Fairbanks of St. Johnsbury, Vt., was the first one named, but a proviso in the law allowed the contract to be assumed by a company chartered by another state, as the constitution of Michigan forbids its legislature to grant special charters for any purpose. The state of New York then came to the front with a special act, incorporating the St. Mary's Falls Ship Canal Co., with a capital of $1,000,000, and it was under this organization that the canal was built."

Hon. Erastus Corning of Albany, N. Y., the president of the contracting company, was also the first president of the New York Central Railway Co. and of the Albany & Schenectady railway which preceded it. He was a member of congress for several terms, and for a time could be designated as the leading business man of the state of New York. The secretary and treasurer was the Hon. J. V. L. Pruyn, afterward chancellor of the university of New York. Among the directors and incorporators were Erastus Fairbanks, some time governor of Vermont and a member of the celebrated firm of scale makers who invented and manufactured the first improvement in weighing appliances since the Patriarch Abraham weighed out the price of the cave of Machpelah nearly 4,000 years before; John W. Brooks, then manager and engineer of the Michigan Central railroad; John F. Seymour, a leading lawyer of Utica, N. Y., brother of Horatio Seymour, afterward governor of New York and democratic candidate for the national presidency (whose namesake and nephew was afterwards state engineer of New York); John M. Forbes, a leading merchant and capitalist of Boston; August Belmont, the eminent banker of New York city and a connection by marriage with Commodore Oliver H.

Perry, the hero of the naval engagement of Lake Erie; James F. Joy of Detroit, one of Michigan's distinguished citizens, and others whose names brevity compels us to omit. Those given will suffice to show the eminence of the men whom the nation can now honor for presenting it with the most useful public work as yet existing in its vast domain. The eminent author, Charles Lanman, in his history of Michigan published in 1871 remarks (page 90): "In consideration of its national character as a highway between the lower lakes and Lake Superior, and in view of the sound character of the work the originators and builders of this canal deserve the gratitude of the country."

UNIQUE OPPORTUNITY FOR INTERCHANGE OF NATIONAL COURTESIES.

Ninth—The resolution provides for an invitation to be extended to representatives of the dominion of Canada and of its provinces bordering on, or contiguous to, the basin of the St. Lawrence to particpate in the proposed celebration. That such invitation will be cordially accepted there is no doubt, and it will be in fact the first national act of courtesy extended to our neighbors on the north whose friendship is well worth cultivating. Canada is the largest foreign customer for several of the products of the United States and pays a cash balance in trade of over $50,000,000 a year according to the latest returns. A large sum would evidently, upon economic grounds, be well spent in promoting good feeling with the enterprising communities beyond our northern boundary.

Tenth—The crowning glory of the proposed celebration will be the fact that it can exhibit a state of international comity, not recorded, or existing, on an equal scale, between any other nations of the world, ancient or modern. The United States has there the widest canal lock in the world, on the south side of the rapids of the St. Mary's river; while on the north side, about a half mile distant, the dominion of Canada, flying the flag of Great Britain, has the longest canal lock on the globe, both being now in actual operation. These are absolutely free to the use of vessels of either nation, and captains of approaching steamers often do not decide which to utilize until near enough to see the one most clear from passing vessels. This spectacle of peace it is well to contrast with that of war, when near the beginning of the last century United States soldiers crossed over armed to the Canadian side and disabled the only lock then used to gain marine access to the great upper lake. Or, to that occurring during the last quarter of the nineteenth century, when a British military force going from Quebec to overcome a rebellion in Manitoba, through the pigheadedness of the officials at the then only canal, which was on the American side, was obliged to walk around the falls through Canadian territory, while their transport was locked through the canal to take them aboard on the upper level. Col. Wollesley, then in command, has since been commander-in-chief of the British army. This affront doubtless hastened the building of the canal on the Canadian side of the river, but the twentieth century has seen all jealousies of this nature obliterated, and it is to be hoped that the same will remain buried for all future time. It is undoubtedly true that on no other occasion can an interchange of national courtesies and peace-promoting civilities take place between the two great Anglo-Saxon nations of the world under such propitious conditions and surroundings as those now proposed.

The foregoing ten points of excellence must suffice as presenting the main features of this great and grand opportunity. To what extent congress will aid its utilization by a suitable appropriation remains to be seen. There is no doubt that the state of Michigan will amply provide for the local entertainment of all invited guests. That the $50,000 asked of the United States will be but a moderate allowance for providing a suitable commemorative monument, compiling a memorial volume, and for covering supervising expenses, seems evident; but if congress will add an equal amount to provide for a tour of inspection by all its members, not only to the canal but other salient points and ports of interest in the St. Lawrence basin from the falls of Niagara to the harbors of Duluth in Minnesota, and Superior City in Wisconsin, by a special charter of the unequalled steamers before mentioned, the nation will be many times repaid by the utilization of the information thus obtained in the adaptability of subsequent laws to the best interests of the great lake region.

The memorial is signed by Peter White, president Mackinaw State Park Commission; Charles T. Harvey, first construction engineer; Hiram A. Burt, son of first state superintendent of the canal, deceased; Horatio Seymour, son of Director John F. Seymour, deceased; Edward T. Fairbanks, son of first person named in state contract, deceased; Ralph D. Williams, editor Marine Review; Oliver Hazard Perry Belmont, New York.

JOINT RESOLUTION IN CONGRESS.

The joint resolution to which the memorial pertains is as follows:

"To provide for the commemoration of the semi-centennial anniversary of the commencement of the construction of the ship-canal between Lake Huron and Lake Superior at the falls of the St. Mary's river in the state of Michigan, occurring June 4, 1903.

"Resolved by the senate and house of representatives of the United States of America in congress assembled, that the secretary of war be and he is hereby authorized and directed to cause suitable measures to be taken by and with the advice and consent of the commission hereinafter created, to commemorate the first half-century anniversary of the commencement of the construction of the original ship-canal at the falls of the St. Mary's river in the state of Michigan, which will occur on June 4, 1903.

"First—By the placing of a bronze tablet in a suitable position in the masonry now occupying the site of the locks built in 1853-4, or on a monument to be placed contiguous thereto, with the names inscribed thereon of the state officers, contractors and engineers officially connected with the undertaking, and including the dates of the commencement and completion of the work.

"Second—By the compilation and publication of an illustrated memorial volume containing biographical notices of the persons whose names appear on said tablet, with full historical data relating to the conditions promoting industrial and commercial results pertaining to said canal and to its subequent enlargement, growth of commercial utilization, or otherwise.

"Third—By co-operating with the state of Michigan in such local commemorative exercises as may be jointly arranged, and to which representatives of the several states and of the dominion of Canada and of its provinces bordering on or contiguous to the basin of the St. Lawrence river, and of the municipalities therein benefited by the commercial facilities of the canal are to be invited.

"Resolved—That for the expenses incident to the execution of said measures, the sum of $50,000 is hereby appropriated; that a special joint committee of the senate and house of representatives be and is hereby constituted, to be known as the Great Lake Canal Semi-Centennial Commission, to consist of five senators, designated by the president of the senate, and ten representatives, appointed by the speaker of the house, to which commission the secretary of war shall refer the details of the measures mentioned in the preceding resolution, together with the auditing of the expenditures therefor, to be certified by the chairman and secretary of the commission upon examination by a sub-committee designated by it for that purpose."

INCREASE IN EXPORTS OF MANUFACTURES.

Exports of manufactures show a decided improvement in the record of foreign commerce of the United States for the first ten months of the present fiscal year. The report of the treasury bureau of statistics showing the detailed exports from the United States by articles during the month of April and during the ten months ending with April shows a marked improvement in the record of manufactures exported. The exports of manufactures for the month of April, 1902, are $4,500,000 greater than those of April of the preceding year, being $38,961,301, against $34,416,279 in April, 1901, and forming 36.5 per cent. of the total exports in April, 1902, against 29.1 per cent. in April, 1901. For the ten months ending with April the exports of manufactures are $333,820,809, against $339,307,623 for the corresponding ten months of the preceding fiscal year, a reduction of about $5,500,000 for the ten months. This would indicate that the total exports of manufactures during the full fiscal year which ends with the present month will fall little, if any, below those of last year.

An examination of the details of the exports shows that the small reduction of $5,500,000 which exists at the present time occurs chiefly in manufactures of iron and steel, the exports of which are $82,388,463, against $99,228,228, comparing the figures for ten months of this year with those for the same months of the preceding year. Thus the reduction in exports of iron and steel manufactures alone is much greater than the net reduction in total exports of manufactures, indicating a marked gain in other classes of manufactures. In iron and steel, however, the figures for the month of April show a marked improvement over those for earlier months of the year, being $9,320,633, against $9,081,223 in April, 1901. In iron and steel exports the principal reductions in the ten months occur in pig iron, a decrease of nearly $3,000,000; steel rails, nearly $5,000,000; and metal working machinery, nearly $1,000,000.

In other articles of manufacture, which some months ago showed a marked reduction, there has been a decided reaction and a return of normal conditions. In manufactures of copper, which during the early part of the year showed a very great reduction, the figures for ten months fall but $3,000,000 below those of the corresponding months of last year, while those for the month of April are nearly $3,000,000 greater than those for April, 1901. Exports of mineral oil, which also showed a decrease during the earlier part of the year in comparison with the same months of the preceding year, are for the ten months ending with April, 1902, nearly $3,000,000 greater than those of the same months of 1901, while the quantity exported is about 80,000,000 gallons greater than in the corresponding months of the preceding year. Exports of paraffin, which showed a material reduction in the early months of the present fiscal year, are for the ten months ending with April $1,500,000 in excess of those of the same months of the preceding year. The largest increase, however, is in exports of cotton goods, which for the ten months ending with April are $26,436,379, against $15,115,561 in the corresponding months of last year and $20,202,272 in the corresponding months of the fiscal year 1900. This increase in the exports of cotton goods is chiefly to China, to which the exports were largely suspended in 1901 owing to the disturbances then existing in that country, but are also much larger than those of any earlier year. The total exports of cotton cloths alone to China from the United States in the ten months ending with April, 1902, are 272,439,390 yards, valued at $13,314,261, against 44,660,272 yards valued at $2,494,247 in ten months of 1901, and 164,334,855 yards valued at $7,810,823 in ten months of 1900.

WIRELESS TELEGRAPHY COMBINATION.

Various companies organized to operate wireless telegraph systems in the United States realize the advantage of bringing about the organization of one company that would be free to use all the desirable features possessed by the apparatus of each of the several companies. The work of organization is now going on. The companies are the American Wireless Telegraph Co., parent organization; the New England of Boston, Federal of Philadelphia, Gulf of New Orleans, Western of St. Louis, Northwestern of Chicago, Continental of Phoenix, Ariz., and Pacific of San Francisco. The Northwestern Wireless Telegraph Co. of Chicago is the last to enter the combination, having hung out to secure better terms than were at first offered it, and now that these have been secured a stockholders' meeting has been called for June 25 to consider the offer. It is understood that the president of the Northwestern, Joseph Schwab, will be vice-president of the national organization.

The Review regrets to announce the death of Mr. R. Quiller Lane, an artist of much ability, who has been an occasional contributor to its columns for several years past. His drawings of steamships were among the best. Mr. Lane was born at Gainsborough, Lincolnshire, in 1848. His parents afterwards taking up their residence at Belfast, he attended the government school of art at that town, in which he had the unique distinction of winning the national gold, silver and bronze medals for designs. He was for many years the chief draughtsman with Musgrave & Co., Ltd., Belfast. Later he took up black and white work and went to London where he became a frequent contributor to the leading illustrated and technical papers.

The Baltimore Ship Building & Dry Dock Co., Baltimore, Md., is practically rebuilding the Norwegian tramp steamer Hero. She was swept ashore off Colon in a recent gale and badly damaged.

COMMERCIAL EXPANSION.

MR. JAMES J. HILL'S MAGNIFICENT ADDRESS ON OUR COUNTRY'S DEVELOPMENT—ADVOCATES ABOLITION OF TARIFF—RECOGNIZES THE IMPORTANCE OF THE LAKE SUPERIOR IRON COUNTRY.

Following is the full text of the address on "Commercial Expansion" delivered by James J. Hill, president of the Great Northern Railway Co., at the dinner of the Illinois Manufacturers' Association in Chicago last week. It is, indeed, a masterful effort. Mr. Hill said:

"Commerce is the exchange of commodities, and the term is generally understood to include the buying and selling between individuals, and, in a wider sense, between communities and nations. Behind its adventurous leadership have followed civilization and Christianity to the remotest parts of the world. The commercial nations of the world have, at all times, exercised the strongest influence for good among the nations of the earth. The development of commerce is the effort by a country to find a market for its own productions, or to supply itself with material for its necessities, or to further increase its means of commercial expansion. The commercial expansion of a nation is the best index of its growth. Commercial growth is both domestic and foreign.

"Following the civil war came a period in the history of our country of internal development, which has been the wonder of the world. Since the close of the war in 1865, the enormous territory west of the Mississippi has grown from frontier settlements into great, populous and wealthy states. The population of the United States in 1865 was about 34,000,000. The succeeding thirty-five years ending in 1900 carried it to 76,000,000 and today we are increasing at the rate of 1,500,000 a year. The various census reports show that the population of the United States about doubles every thirty years, so that by 1930 we would, at this ratio, have a population of 150,000,000 people.

IMPORTANCE OF OUR AGRICULTURAL RESOURCES.

"In the past the public domain suited to cultivation of the soil, producing every useful crop, has furnished homes for the multiplying population. Today we have about reached the limit of our public domain which can be made to furnish homes for an intelligent and enterprising population. In many of the western states are enormous areas of the best land which, with irrigation, can be made productive in the highest degree. One hundred and sixty acres of land, with a certain supply of water, which will insure to the husbandman a bountiful harvest, is equal to twice that area where the land is subject to the natural conditions of either too much or too little rainfall. One-half of the population of the United States is occupied directly or indirectly in the cultivation of the land, and I think fully one-half of the entire capital of the country is invested in farms and their belongings, and when we come to the questions of intelligence, patriotism and good citizenship, the agricultural population stands out today as it has in the past, as the great sheet anchor of the nation. The wealth of the world comes from the farm, the forest, the mine and the sea. While our country has been blessed with wonderful mines of coal, iron, gold, silver and all the other valuable mineral productions, with magnificent forests of useful timber, still the farm has, from the beginning, been the foundation of our growing wealth and greatness. During the last three years the balance of our trade with other nations, that is the amount we have sold in excess of what we have bought, has averaged about $700,000,000 annually and two-thirds of this has come to us through the export of the produce of the soil. I do not wish in any manner to belittle the importance of our growing manufactures or their relative value in the commerce of the country. The security of their foundations has always rested upon the agricultural growth of the nation and in the future it must continue to rest there. Every manufacturer, every merchant, every business man throughout the land, is most deeply interested in maintaining the growth and development of our agricultural resources. In the past we have been in the habit of feeling that Uncle Sam was rich enough to give us all a farm, but, today, as I said before, the arable land suitable for agriculture is practically all occupied.

URGES FEDERAL CONTROL OF IRRIGATION.

"In a few limited communities of the west irrigation has been commenced by what may be called 'individual effort.' Owing to diverse laws, made to suit particular interests, the irrigation of large areas is attended by greater difficulties than can be well surmounted by individual effort. The policy of a broad, comprehensive, national plan of irrigation has been urged upon congress with but little success in the past. However, an enterprise of such magnitude and importance to the nation as a whole, which importance will grow as our population grows, cannot be turned aside or lost sight of, for the reason that every citizen of every state in the union is deeply and vitally interested in the question. President Roosevelt, who has spent some of his time in the semi-arid regions of the west, has taken an active interest in this subject, and if his efforts, and of others who are working for the same end, result in success, future generations will rejoice in the memory of this work, while they build for themselves comfortable homes in the thousand valleys covering that portion of the country which is now given up as grazing ranches for cattle and sheep. With proper irrigation these valleys will furnish homes for intelligent and industrious people, and the number of cattle and sheep raised on the land will increase many fold. For the first time in the history of this country, thousands of our farmers from states like Iowa, Kansas, Missouri, Michigan, Wisconsin and Minnesota are seeking homes in the Canadian northwest owing to the cheap lands offered in that country, and to the difficulty of securing such lands in the United States. We never expected to see the time when farmers and farmers' sons from the best states of the west would be forced to leave their country and their flag to seek homes in a foreign country. The United States has many social questions to settle in the near future, and nothing in this connection will take the place of its ability to provide good homes for those who desire to sit under their own vine and fig tree. Land without population is a wilderness and population without land is a mob.

THE COUNTRY'S DEBT TO THE RAILWAYS.

"Considering the question from a broad national standpoint, the next interest in importance to agriculture is the railway interest of the country. The entire railway growth is within the memory of men living. Twenty-five years ago it was not supposed possible that railways would ever be able to carry heavy and cheap commodities, which were up to that time almost exclusively shipped by water. Great elevators were built in Chicago, Milwaukee and other lake ports, to hold the grain for the season of open water, in order that it might move to market at a fair rate. Early builders of railways never realized the service to be rendered to the country by the railways. I think I am safe in saying that next to the Christian religion and the common schools no other single work enters into the welfare and happiness of the people of the whole country to the same extent as the railway; no other work could have made it possible to occupy the enormous stretches through the interior of our country and people them with cities, towns and villages. While the railways have to answer for many mistakes of judgment, or of intent, on the whole the result has been to create the most effective, useful, and, by far, the cheapest system of land transportation in the world. In England the average amount paid by the shipper for moving a ton of freight 100 miles is $2.35; in France, $2.10; in Austria, $1.90; in Germany, where most of the railways are owned and operated by the government, $1.84; in Russia, also government ownership, where the shipments are carried under conditions more similar to our own than in any other country as respects long haul, $1.70; in the United States the average cost is $0.73, or less than 40 per cent. of the average cost in Europe. And this is done while every article used by the railroads, including labor, costs more in this country than it costs in Europe with the exception of coal and right of way. Wages in the United States are, as a rule, more than twice as high, and this high cost in the United States is constantly increasing. Take, for instance, the material in an ordinary box car, the cost of which has increased in the past three years over 20 per cent. You gentlemen, whose manufactured articles are sold throughout the country, are always able to base your selling price on the cost of production, and when your raw material and labor increase the cost, your prices are advanced, but, notwithstanding the enormous advance in wages, in material of every kind, the rates of transportation in the United States have gone steadily down from year to year, until they are by comparison so much lower than those of any other country that there is no comparison between them. If these results have been accomplished under all the changing conditions of financial prosperity and adversity in the past thirty years, have we not, as a nation, reason to rejoice in what has been accomplished rather than to seek to destroy or appropriate the means which have brought about these results?

"A few weeks ago a member of the interstate commerce commission, in an address before your association, made some statements which, if correctly reported, I feel called upon to deny. The gentleman is quoted as having said that rates have not been reduced during the past ten years, but that they have been advanced in that time. The published report of the interstate commerce commission for the year ending 1900, on page 94, shows the average rate per ton mile in 1890 to have been .941 cent; in 1900 (ten years later) .729 cent. Surely the gentleman does not mean to say that the latter is a larger amount than the first, which is practically what he is reported as having said."

Mr. Hill then proceeded to outline the powers of the interstate commerce commission and to point out how dangerous it would be for the government to seek to control the operation of the railways. He felt that such an attempt would result in the destruction of the government itself. Continuing he said:

COMMON INTEREST BETWEEN THE RAILWAY AND THE PUBLIC.

"There is a common interest between a railway company, that is between those who hold its bonds and its stock, and the territory served by its line. The bondholder has an interest in the earnings to the extent of the interest on his bond; the stockholder to the extent of obtaining reasonable dividends upon his stock. The amount of interest and dividend charge is limited. Only such rates can be maintained as will yield net earnings sufficient to pay interest and reasonable dividend. The common interest of the territory served by a railway company is in obtaining transportation and reasonable service at a low rate and at such rate as will enable those who live in the territory to sell what they produce, or have to sell, in available markets at a fair profit. The price of transportation must always be such as to enable the company to pay interest on its obligations and a reasonable dividend to the holders of its stock. If that amount is earned upon a light traffic, the rate per unit of traffic will be higher than it would be if the traffic is heavy. The interest of the territory along the line of the railway rests mainly in the increase of the density and volume of traffic.

"The amount of money received from the sale of bonds and stocks having been invested in railway construction, the company has a right to earn an amount sufficient to meet its interest and dividend obligations. It is for the public interest that the amount to be earned should be derived from a large volume of traffic at a low rate, rather than a small volume of traffic at a high rate. If the earnings which the railways are entitled to receive were to be derived solely from traffic beginning and ending on their respective lines, the rates or price of transportation would necessarily be much higher than it is. The interest of the public served by the railways is largely in the increase of the volume of interstate and international traffic over the lines. Take, for instance, the lines of the Great Northern and Northern Pacific from Lake Superior and the Mississippi river to Puget sound. All the interstate traffic they can obtain from the great freight-producing area south of Lake Superior and east of Chicago must come to them across the lakes, which are closed to navigation one-half of each year, or around the south end of Lake Michigan by way of Chicago. To increase the volume of traffic and thus be able to reduce rates, these two companies must secure a share of the interstate traffic from the territory named and must also be able to reach territory furnishing market for the freight produced along their lines and return freight to be transported over their lines and by steamship connection with Pacific coast terminals. If the stock of the railway is held as an investment by those interested in the territory served by the lines, in increasing the volume of traffic and in reducing the rates, the territory will be built up and rates will be lowered. If the question of the ownership of stock was left to the public served by the lines of the railways of the country, would it not be for the interest of the public to have such ownership placed in the hands of those who had

acquired it as an investment and whose interest is directly connected with the building up of the lines and building up the territory served by them?

"There has been during the past year a great deal of public discussion about railway competition and a large amount of volunteer literature has been written on the subject. It is always a safe basis to assume that no business will continue for any length of time if the result of its transactions is a loss, and this is equally true of your business and of that of the railways. No individual, community or nation can afford to build up its commerce on the foundation that railways will destroy each other for the general benefit. This has been done in some cases in the past and the roads which have followed this course have gone through the portal of bankruptcy into the hands of rival owners, and, in some cases, into the hands of owners whose greater interest is in other directions, and whose object in obtaining them has been more to restrict the growth of the country than to increase it.

"Competition in railway rates is either active or inactive. All railway rates are the subject of conference between the lines interested, followed by an agreement as to rates, and the conditions of the business of the country demand that this course must always be followed. All rates are by law made public, and whatever rate is adopted by one road must be adopted by the others, or they will lose their share of the traffic. In this there is no active competition. When competition is active, tariffs are disregarded and private rates are made to large shippers and rebates paid, amounting, as has been published, to enormous sums in the yearly aggregate. To prevent this active competition, both the federal government and the several states have enacted laws which have been a dead letter on the statute books until public opinion has demanded that the various commissions take some action under the law. The recent activity of the interstate commerce commission has resulted, I believe, to a large extent in correcting this abuse, and, if they follow it up with the power conferred upon them, the entire system of private rates will be abolished to the advantage of the trade of the whole country, and of the railroads as well.

"There is, however, a competition between the railways which will continue to exist as long as the railways are run, and that is the competition of markets; the necessity of building up the various interests of the country served by the respective railway lines. In this the competition lies between the producer and the railway in one locality, acting together, against the producer and the railway in another locality, competing for the business. If the railway is to increase its traffic, it can only be done by increasing the business of its customers. This same principle applies to the occupation and cultivation of the land along the lines of railway throughout the country, and particularly applies to the lines west of Chicago. Unless the farmer can make money by the cultivation of his land, either through selling his wheat, his grain, his cotton or his stock, with a profit to himself, the time must come when he will cease to cultivate the land, and the railway is left, as it were, in a desert.

DEVELOPMENT OF NORTHWEST LUMBER TRADE.

"We have on the Pacific coast the largest body of first-class saw timber left in the United States. When I first visited that country, with a view to extending our lines to the coast, I saw at once that unless we could carry their lumber to market at a price that would enable them to manufacture and ship it with a profit our railroad would have no business. The first and great crop of that country is its lumber. We made a rate of 40 cents a hundred for 2,000 miles, or four mills a ton per mile, on this lumber, in order that we might load back the cars that carried out the merchandise to the west. This rate was necessarily met by other roads, and the result was the expansion of the lumber trade of Washington and Oregon, so that today it is over ten times what it was nine years ago, and in place of seeking additional loads for our cars from the west, we are now seeking additional loads for our westbound cars going out to be loaded with lumber for the great treeless states of the middle west, and the development of this Pacific coast lumber traffic will work a greater change in the Oriental trade of the country than all the efforts of all the men engaged in that traffic. To enable us to keep pace with the enormous demand for this lumber was the moving cause of our building the largest ships in the world, through which we will be prepared this fall to meet not only the rates of other transcontinental lines, both in the United States and Canada, but we will meet the rates made by steamer from the Atlantic ports via the Suez canal. Every manufacturer reached by any railway in the United States can ship his goods to the Orient by rail to the Pacific coast and thence by steamer at rates that will compete with water transportation from the Atlantic seaboard to the east by way of the Mediterranean and Suez canal. Were it not for the certainty that there is a carload of lumber waiting for every empty car that we can furnish on the Pacific coast, we could not carry the Oriental business at twice the rates we will offer.

TRADE OF THE EAST A PRIZE WORTH STRIVING FOR.

"Much has been said about the increase of traffic in the east. I will use as an illustration what has occurred in Japan. Twenty years ago the foreign trade of Japan was not to exceed $1 per capita of the population. Today this trade is equal to $6 or $7 per capita of its population. Twenty years ago it amounted to about $40,000,000 and today it amounts to about $250,000,000, of which the United States' share is less than one-fifth. Ten years ago we exported about $5,000,000 annually to Japan, and imported from her about $26,000,000. Now, our exports to Japan amount to $30,000,000, or six times as much as they were ten years ago, and the increase in our imports has been very small. In 1890 the entire foreign trade with China amounted to about 90 cents per capita. With a good stable government which will protect the Chinaman in the fruits of his own labor and enterprise, there is no reason why the Chinese trade should not increase as rapidly as that of Japan has increased. The Chinaman is the better merchant of the two. Should the Chinese trade increase to $3 or $4 per capita, it would amount to more than the entire exports of the United States, and, surely, this trade is worth striving for.

"A country where labor is paid from 10 to 25 cents a day cannot indulge in many luxuries, and our trade with the Orient must be largely in the necessities of life and such articles as they cannot produce. We have already built up a large demand for American cotton and flour, which a few years ago were unknown in China and Japan. This cotton mainly goes from Texas and other southwestern states, and it may surprise you to learn that seven-eighths of it during the past year has gone by way of Puget sound ports. With Manila as an American port in the east and the best ships that can be built we should be able to maintain ourselves as a nation in the control of a large share of this traffic.

"We enjoy today a share of the traffic of the various European nations under such conditions as their tariffs will allow. Great Britain is our best customer. She buys about two-thirds of all our exports to Europe, and, until recently, she has received our products on conditions as favorable as those enjoyed by her own colonies. We cannot, as a nation, go on receiving the great balance of trade which has been paid us for the past few years. Our balance of trade some years has been double the production of gold and silver in the whole world, and, logically, if it should continue the time would come when we would have all the gold and silver and our customers would be bankrupt. This condition would only be less unfortunate for ourselves than for them. Our customers must have the means to pay us, and to get this means they must sell something to somebody.

"We have enjoyed all the benefits of a protective tariff for many years, and whatever good it can do in the way of building up infant industries has already been accomplished. The growth of our enormous iron and steel industries, which are pointed out as the result of our protective tariff, can be more surely traced to our enormous resources in the iron mines of Michigan, Wisconsin and Minnesota than from all other sources. The cheap production of the highest grade of ore in these mines and the low rates of transportation to Lake Erie ports have done more to build up the iron and steel industries of the United States than all the tariffs that have ever been placed upon the statute books, and today, if these mines were closed, our superiority in the iron and steel trade of the world would be gone forever.

COMBINATIONS OF CAPITAL NEEDED.

"There is another subject which I think will not be devoid of interest to the manufacturers of Illinois, and that is the so-called trusts or combinations of capital. In a country as large as ours, carrying on enormous undertakings, large amounts of capital are necessary, and this capital can be more readily furnished by corporate ownership than in any other way. There are a few individuals in the country who might furnish $50,000,000 or $100,000,000 with which to carry on any particular branch of business, but there is no certainty that they would furnish one dollar. A man with that amount of money does not need all the trouble and annoyance attending a large business of any kind, so that it is necessary that this work shall be done through corporate effort, and no harm is likely to come to the country growing out of the magnitude of the business. Has the enormous business of the Krupp company in Germany injured the German nation or any of its people? On the contrary, the nation and the people are proud of the name of Krupp. Can any one in this country point out an injury inflicted on the people which can be traced to the magnitude of the Carnegie company?

"The only serious objection to trusts has been the method of creating them—not for the purpose of manufacturing any particular commodity in the first place, but for the purpose of selling sheaves of printed securities which represent nothing more than good will and prospective profit to the promoters. If it is the desire of the general government through congress to prevent the growth of such corporations it has always seemed to me that a simple remedy was within their reach. Under the constitutional provision allowing the congress to regulate commerce between the states, all companies desiring to transact business outside of the state in which they are incorporated, should be held to a uniform provision of federal law, that they should satisfy a commission that their capital stock was actually paid up in cash or in property, at a fair valuation, just as the capital of the national banks are certified to be paid up by the comptroller of the currency. It is only fair to a dealer in Minnesota or California or Oregon, that if a company claims to have ten, twenty or fifty millions of capital, desiring to do business in that state, that the dealer should know that the company's solvency has been passed upon by a federal commission and that its capital was what it was advertised to be. With that simple law, the temptation to make companies for the purpose of selling prospective profits would be at an end, and, at the same time, no legitimate business would suffer; nor would any number of individuals, desiring to engage in business through a corporation, suffer any hardship because their actual capital was as they advertised it to be. We have been as a nation too ready to look to state and federal legislation for remedies which are beyond their power to give. The laws of trade are as certain in their operation as the laws of gravitation. You might as well try to set a broken arm by statute as to change a commercial law by legislative enactment. You may obstruct and delay for a time, but, in the end, the inexorable law of experience, and the survival of the fittest, will prevail. That is the universal law of nature in every branch, and, in its working it is eternal. Let us, therefore, leave well enough alone. That which is good let us keep and that which can be made better let us approach with intelligence and work together for the accomplishment of results that will benefit, not only one, but all the various states of the country, and, in that way, secure the prosperity of the individual and separate interests as well."

The Marconi Wireless Telegraph Co. has completed its new station at Sagaponack, near Bridgehampton, L. I. This will supplement the Nantucket station's work in furnishing maritime information. The American line has signified its intention of installing the Marconi system, now used on the Philadelphia, on board the St. Louis and St. Paul. The United States coast survey has made arrangements to use the devices on board of one of its steamers and the United States signal corps has signed a contract for its employment in Alaska. The company expects to complete its primary station at South Wellfleet, Cape Cod, for transoceanic messages about June 22.

Judge Lacombe in the United States circuit court of New York has denied the application made by the C. H. Werner Co. and others to restrain the United States Steel Corporation from issuing $200,000,000 in bonds and retiring at the same time the same amount of preferred stock of the corporation. The steel stocks have, of late, been made the subject of attack from an organized bear pool credited with being unfriendly to the Morgan interests.

FIRST STEAMBOAT TRIP ON LAKE SUPERIOR.

The story of the first steamboat ride on Lake Superior on the Independence is told by Lewis Marvill of Parksville, St. Joseph county, Mich., in an article which appeared in the Ontonagon County Miner. While written from memory it has every appearance of authenticity and is therefore of historical value. Mr. Marvill says:

"My memory carries me back to the spring of 1845, or more than one-half of a century, and I have a vivid recollection of standing on Dorr & Webb's dock in Detroit early in the spring watching the process of transforming a little tub of a sloop, of about 15 tons, into a fore-and-after, called the Ocean. My funds being rather low I determined to ship if I could, and ship I did. We took in a cargo of fish for Sandusky and Milan, O., and in due time sailed for those ports, and returned without any mishaps. We then received orders to fit up for Lake Superior, which we accordingly did, but being slightly indisposed when we got ready, I could not proceed with the vessel, which sailed without me. Some time in June, the same firm that owned the Ocean bought and fitted up the topsail schooner Merchant of about 75 tons, Capt. John Watson, for the same trade, i. e., Lake Superior, and I being determined to visit that famous lake, shipped on her, with the understanding that I might join my own ship (the Ocean) at the Sault if I felt so disposed. In due time we took on board all the necessary materials for taking both vessels, the Ocean and Merchant, over the rapids and reached the Sault, where we found the Ocean waiting for us. We fell to and worked her over in short meter, and then tackled the larger one, the Merchant. They were taken over on rollers the same as buildings are sometimes moved. When we had her about half way across, word came that a steamer had just arrived from Chicago, with all the rigging on board, to be taken over the rapids. A few days after a misunderstanding arose among the crew of the Merchant, and a part of them quit and left her. Hearing that they were in want of a porter on board the newly arrived steamer Independence, then lying at McKnight's dock getting ready to be hauled over, I applied and got the berth of porter and immediately began my duties as such.

"Everything being in readiness the ship was hauled out of the water, and began its transit across the neck of land forming the rapids. No mishaps occurring, the process of hauling progressed slowly but surely, and in about seven weeks we were again launched in the river at the head of the falls. In the meantime the schooner Napoleon of about 150 tons, was being put together (her whole works having been got out and shipped there ready) and she was launched a short time before the Independence, and so was the Merchant, she having stuck in the process of launching, which caused considerable delay. By this time it had got to be quite late in the fall and it began to be feared that we would not be able to make the trip before we were froze in. But finally we got away with a crew of fourteen men and steamed up the lake. The first place we touched at was Copper Harbor, or Fort Wilkins (no such place as Marquette then being thought of), where we found a small garrison and two or three log huts. The next in order was Eagle Harbor, where there were a few prospectors, and then on to Eagle river, where we discharged the most of our cargo, but before we could throw off some fifty kegs of powder the wind raised from the northwest and kicked up such a sea that we had to weigh anchor and leave. We shaped our course for La Point but made very poor headway, the wind being almost ahead. We, however, persevered till we got within sight of the Apostle islands, when the wind freshened into a gale and we had to turn about and run before it and make for the lee of Keweenaw point, the nearest harbor that we dare enter with safety. In the meantime the seas got running so high that it tossed our little steamer like a shell and rolled so heavy that the stoves broke loose from their moorings and tumbled all over the floor. When it is remembered that it was not generally known among passengers and crew that we had fifty kegs of powder aboard it made rather lively work for us straightening things up. We succeeded in reaching our objective point in safety, where we cast anchor and laid by for three or four days waiting for weather, repairing and laying up a stock of wood, which we had to chop and take off in our yawl—rather slow but sure work. We again set sail, and this time having favorable weather, we succeeded in reaching Eagle river where we bid good-bye to our dangerous cargo (powder), and where some of us strolled up to the Cliff mine and there saw the first stamp mill (rather a primitive one) in operation in that now famous region. Returning on board we again steamed up the lake to La Point, our final destination (no such place as Ontonagon then being thought of), which we reached in safety, and gave the natives a dreadful scare with the appearance of our craft and the noise of our steam whistle.

"Our trip up the lake being now accomplished, we started on our return to the Sault, which we reached in safety. The season being now far advanced, we immediately proceeded to dismantle the steamer and laid her up for the winter, in company with the following named crafts, which then constituted the available fleet of the greatest of great lakes: The Ocean, about 15 tons; Chippewa, about 20 tons; Algonquin, about 30 tons; Swallow, about 40 tons; Merchant, about 75 tons; Napoleon, about 150 tons, and the Independence, about 365 tons, the first steamer that ever ploughed Lake Superior. Thus ended that memorial first day trip by steam to the mining regions. We found below the falls the steamer Baltimore, which was either hauled over in the winter or early spring. The Napoleon was fitted up the next summer with engines."

PRESIDENT LIVINGSTONE ON LAKE COMMERCE.

During the recent trip of the Michigan Bankers' Association to Sault Ste. Marie President Livingstone of the Lake Carriers' Association addressed the bankers upon the commerce of the great lakes. He said that one-half the fresh water of the globe is contained in the lakes and that but few people outside of those actually engaged in lake commerce realized the immense proportions which lake trade has attained. In part Mr. Livingstone said:

"In 1881 the total freight tonnage passing throught the Sault canal was a little over 1,500,000 tons, or to be accurate, 1,567,000 tons. It was not until 1892 that this commerce had passed the 10,000,000 mark, but in 1898 it passed the 20,000,000 mark. Last year, 1901, it had increased to 28,500,000 tons, and in my judgment another year will see it pass the 30,000,000-ton mark. This makes the tonnage passing through the Sault canals last year over three times the freight tonnage passing through the Suez canal, the freight tonnage passing through that canal last year being a little less than 9,000,000, and in this connection also it must be borne in mind that the Suez canal is open the entire 365 days in the year and has the whole world to drawn from, whereas the Sault canal only averages 220 days a year, and to quite an extent it has to draw its traffic from the territory which surrounds it.

"I have been speaking now exclusively of Lake Superior commerce. To be added to this is all the tonnage shipped by water to and from all other lake points—Lakes Michigan, Huron, etc.—which added to the Lake Superior tonnage, will increase the amount to about 47,000,000 tons of freight that passes through the Detroit river. This is more tonnage than all the vessels entering and clearing in the foreign trade at all ports of the United States. In this connection also over one-half of our American steamers of 1,000 gross tons and upwards, and nearly half of our American steam tonnage are on the great lakes.

"I will also briefly add that for loading and unloading facilities, the facilities on the great lakes for dispatch far exceed any and all other points in the world. As an illustration of this in several instances steamers of 7,000 gross tons' capacity have been loaded in four hours and unloaded in ten hours, incredible as the statement may seem. In grain the steamer Superior City delivered at Northern elevator, Buffalo, 270,000 bushels oats and barley in ten hours. About thirty-five years ago a vessel passing through the Welland canal carrying 600 tons, or the equivalent of 20,000 bushels of corn—and she had to be shaped like a dry goods box to fit the canal—was considered a large vessel. Last year the steamer William Edenborn carried in one cargo from Two Harbors, Lake Superior, to Conneaut, 8,339 net tons of ore, which is equivalent to 297,000 bushels of corn, which up to the present time is the record cargo of the lakes, almost fifteen times the cargo of thirty-five years ago. Taking the average production of wheat or corn per acre, think of the enormous extent of land required to raise a cargo for a boat of this size for one single trip. Thirty-five years ago over 93 per cent. of the vessels on the lakes were sail, less than 7 per cent. steam; now 95 per cent. are steam, less than 5 per cent. sail, and included in that are the consorts towed by the steamers."

CANADIAN MARINE NEWS.

Kingston, Ont., June 11—Capt. George Batten's feat of taking the big Richelieu & Ontario Navigation Co.'s steamer down the St. Lawrence rapids is expected to materially affect the ship building trade at Toronto and other western points. Now that this experienced Kingston mariner has shown that boats of the 380-ft. class can be taken through the rapids to the seaboard, more large ones are likely to be built in Toronto. Capt. Batten received $1,000 for the dangerous feat. The big steamer is now dry docked at Montreal for slight repairs.

Mr. H. S. Folger of Kingston, general manager of the Thousand Island Steamboat Co., has purchased the fast electric gasoline launch Viator, formerly owned by Mr. V. L. Taylor of Watertown, N. Y. This yacht is 42 ft. long. She is a very fast boat.

During the past three months the Elder-Dempster people have made inquiries of captains and prominent marine men living on the inland waters as to the approximate cost of running both passenger and grain steamers from Lake Superior to Montreal. There is a possibility of a line of steamers in connection with the Elder-Dempster's big liners, being put into service, so that there would then be one route from the head of the great lakes to Europe. But if any such step is taken it will not be for some time to come.

The big coal strike in the states is affecting Canadian coal carrying vessels. At Montreal, Cornwall, Kingston, Belleville and Toronto several schooners, steam barges, etc., are tied up, as there is nothing for them to do.

Capt. Thomas Donnelly, for many years a marine inspector for Inland Lloyds, has been appointed superintendent of the Knapp Tubular Steamship Co. He is known both in his native city, Kingston, and all over Canada as a man of wide knowledge regarding marine matters.

The many Canadian mariners who lately attended the conference of dominion boards of trade, held in Toronto, agitated for a more thorough and systematic dredging of the St. Lawrence route to Quebec. The importance of having the water deep enough to allow of large vessels using the route and thus save the expenses of the transhipping at Prescott or Kingston of grain, merchandise, etc., was pointed out and emphasized.

At the conference of colonial premiers to be held in London, England, this month, one of the important subjects discussed will be the advisability of Canada and other colonies benefited, annually substantially assisting Great Britain in return for the protection afforded Canadian trade and commerce on the high seas by the British navy. The feeling in nearly all Canadian cities is that it would no longer be honorable of Canada to accept the very great and far-reaching protection afforded at so great a cost, without in at least in a small measure paying for the same. The protection afforded is considered as warranting an annual government grant.

Activity in steel rails, following the establishment of the $28 basis for 1903, is the chief feature of the market. It is understood that close to 400,000 tons has been booked for next year, western roads taking large tonnages, while eastern orders of good proportions are in prospect from lines that usually lead in the buying. In addition inquiries now in hand amount to 200,000 tons. It is also quite certain that some orders taken for this year will be carried past Jan. 1. Rails at $28 and billets at $33 to $35 emphasize the peculiar situation in the steel market. It will not continue indefinitely, but at the same time any great increase in the supply of steel going on the market seems rather remote.—Iron Trade Review.

The four-masted wooden schooner Santiago, built by the Kelley, Spear Co., Bath, Me., for the Staples Coal Co., Taunton, Mass., was launched on Saturday last ready for sea. She is 265 ft. long, 46 ft. beam and 19 ft. deep. She has an oak keel, frame of hackmatack and is ceiled and planked with hard pine.

The annual convention of the American Boiler Manufacturers' Association will be held at Atlantic City in the week of Monday, July 21. The headquarters will be at the Palace hotel.

TARTE FAVORS A CANADIAN FAST LINE.

Canada is paying considerable attention to the shipping merger. Hon. J. Israel Tarte, the minister of public works, declared in an interview a day or two ago that the Canadian fast line had become a necessity.

"Canada is large enough," said he, "and her trade is important enough to warrant her in securing her own means of communication, independent of anyone. We should be ready to compete against the Morgan syndicate or any other combination. For the summer terminus of this line I would favor the port of Quebec, because it has all the necessary communications from the Canadian Pacific, the Grand Trunk, the Quebec and Lake St. John, the Great Northern and Quebec Central, while by water it taps all the canals and great lakes by the St. Lawrence route. For winter I would favor the port of Halifax for passengers and St. John, N. B., for freight. The reason I favor St. John for freight is that the Canadian Pacific has direct communication there and we must depend almost entirely upon the Canadian Pacific to furnish the freight for a fast Canadian line. The Grand Trunk has spent some $25,000,000 at Portland and naturally wants to have the benefit of that expenditure while the Intercolonial can bring only local freight from along the maritime provinces."

In reply to the question as to whether the Morgan interests could obtain control of the Canadian Pacific, he replied that too much of the stock is held in England to fear such a coup as that. Even if it should occur, he felt that the government would instantly press for an all-Canadian route across the continent.

SOME LATE CATALOGUES.

The Jeffrey Manufacturing Co. of Columbus are makers of elevating and conveying machinery of every description. The catalogue of the company reaches the dignity of a book and is crowded with half-tone illustrations, made largely from photographs of their conveying and elevating machinery actually at work. The cover is modeled in clay, then photographed and reproduced in half-tone. The artist was evidently influenced by Vedder's magnificent drawings in the Rubiyat of Omar Khayyam, for the likeness of the cover design to that splendid one of Saturn is unmistakable. The catalogue, however, is well done. The company builds carriers for all conceivable purposes, including the loading of vessels, the removal of ashes from power plants and the handling of ore at furnaces. The company has also done considerable work in constructing dredging machinery. The latest catalogue of the company is devoted to the Jeffrey "Century" belt conveyors. These conveyors are designed for the handling of ores, rock, sand, refuse, gravel, earth, coal, ashes, chips, grain and practically everything that has to be conveyed. The catalogue is well illustrated with photos showing conveyors at work.

The latest catalogue of John Bliss & Co., No. 128 Front street, New York is very sensible. It is an illustrated catalogue of chronometers, binnacles, compasses and other nautical instruments manufactured and imported by the company. In the preface the company says that it carries the largest and most comprehensive assortment of works upon nautical subjects to be found in this country, embracing over 3,000 different charts and books of sailing directions, both American and foreign publications. To study the catalogue carefully one would really obtain a liberal education regarding the various nautical instruments.

The Fort Wayne Electric Works, Fort Wayne, Ind., has just issued a catalogue of parts of "Wood" arc dynamos. It is a very serviceable working catalogue for those who desire to order, condensing a great deal of information in a very little space.

GREAT LAKES ENGINEERING WORKS.

The Great Lakes Engineering Works, Antonio C. Pessano, president and general manager, which has purchased the plant and business of S. F. Hodge & Co., Detroit, makes the following announcement in a circular just to hand:

"The works of S. F. Hodge & Co., Riverside Iron Works, builders of high grade marine and stationary engines, propeller wheels, marine pumps and condensors, centrifugal pumps, dredging and mining machinery, forgings of all kinds, fly wheels, rope wheels and gearing of modern design, also marine repairs of every description, will hereafter be known and operated under the name of the Great Lakes Engineering Works. The facilities for producing high grade work in all the above branches will be increased to meet the requirements of the trade, so that our customers will be assured of prompt deliveries and the best of material and workmanship."

EXTENDED TEST OF PNEUMATIC TOOLS.

Referring to the test of pneumatic tools to be carried out by the Chicago Pneumatic Tool Co. in Scotland, the Glasgow Evening Times says:

"British ship builders seem to be at last waking up to the fact that if they wish to keep abreast of the times they must adopt improved methods of work and improved appliances of all kinds. For some time back there have been whispers of important developments in the matter of ship yard tools, and about two months ago we stated that experiments with American pneumatic appliances, more exhaustive than those made in Messrs. Stephen's yard at Linthouse some years since, were to be conducted under the patronage of Clyde builders. We are now enabled to give the details of the arrangements which have been made. The secretary of the Clyde Ship Builders' Association, in conjunction with Messrs. John Macdonald & Sons, local agents for the Chicago Pneumatic Tool Co., have arranged for a six-weeks' trial of pneumatic tools of all kinds, beginning in the yard of Messrs. Scott & Co., Greenock. Three of the best American workmen from Chicago will be in Glasgow shortly, and will, along with three of Messrs. Macdonald's men, start work in Messrs. Scott & Co.'s yard immediately upon arrival. The tools operated will be those used recently on the American liner Zeeland at Southampton, and later on the Cunard liner Etruria at Liverpool. A new stern piece was put on the Cunarder, which required 1½-in. rivets through 9 in. of material, one of the heaviest jobs that has been done either by hand or machinery. At Messrs. Scott & Co.'s yard the work will be mostly on a merchant vessel of 8,000 tons. All kinds of ship yard work will be done—shell riveting, deck riveting, calking, chipping, boring and reaming—so that all the different kinds of pneumatic tools will be experimented with. Practically all the leading ship builders in Great Britain have accepted the invitation of the Clyde Ship Builders' Association to visit the yard while the work is being carried on, and arrangements have been made for having a specified number of them present each day of the six weeks, so that they may all have an opportunity of judging for themselves as to the merits of the work done by pneumatic tools. The definite and complete nature of the arrangements, and the unanimous way in which builders all over have agreed to inspect the tools and the work, shows that those interested in the industry are seriously considering the advisability of making important developments in the different yards."

The two vessels now building at the works of the Maryland Steel Co., Sparrow's Point, Md., for the Atlantic Transport Co. will be named the Maine and Missouri. They are intended for the New York-London service and are 600 ft. long, 65 ft. beam and 44 ft. deep. They will be equipped with quadruple-expansion engines having cylinders 30, 43, 63 and 89 in. in diameter with a common stroke of 60 in.

A four-masted wooden schooner building at Stetson's yard, Brewer, Me., will be launched about Oct. 1.

"BENEDICT-NICKEL" Seamless Condenser Tubes
are the only ones that resist electrolysis.
Far superior to brass or copper.
Our treatise on "Electrolysis of Condenser Tubes" tells why—send for it.
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of modern vessels especially those in the passenger service should demonstrate the supreme possibilities of the wood finisher's art.

This demands a special varnish however, as atmospheric conditions are more destructive to varnish afloat than ashore and the ordinary article is of but little use.

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MANUFACTURERS OF
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THE LATEST AND BEST STOCKLESS ANCHOR.
APPROVED BY LLOYD'S.

ANCHORS CAST AND TESTED ON ORDER, OR STOCK ORDERS PROMPTLY FILLED.

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OPEN-HEARTH STEEL CASTINGS OF THE HIGHEST GRADE.

FACILITIES FOR CASTINGS UP TO 80,000 POUNDS WEIGHT.

MACHINE WORK AND PATTERNS FURNISHED WHEN REQUIRED.

RAIL OR WATER DELIVERIES.

CAPACITY, 1500 TONS PER MONTH

Seaboard Steel Casting Co.,

CHESTER, PA.

ITEMS OF GENERAL INTEREST.

Moran Bros. Co., Seattle, Wash., have notified the navy department that the keel of the big battleship Nebraska will be laid on July 4. The company adds that it has been delayed somewhat of late by a strike at its yards.

Admiral von Tirpitz of the German navy, one of the officers who accompanied Prince Henry on his tour through the United States, has sent with his compliments and best wishes to Secretary Moody two handsomely bound volumes on ship building in Germany and foreign countries. They were conveyed to the secretary through the German naval attache to the embassy at Washington, H. Rebeur von Paschwitz.

Satisfactory tests were made last week of the first large lot of thin-face-hardened armor-plate ever made for the navy. The samples submitted represented the first group of armor for the new armored cruisers of the Pennsylvania class, and the trial was had at the Indian Head proving-ground, under the direction of the naval ordnance board. Two shots from a 4-in. gun effected a penetration of but 1½ in., and the target was not badly bent.

Rear-Admiral Bowles, chief constructor of the navy, made an experimental trip a few days ago on the submarine torpedo boat the Adder. A run of a mile and a half, submerged, was made on the Potomac, opposite Mount Vernon. At its conclusion, Admiral Bowles stated that the boat was well handled and steered well, but the trip, though satisfactory, had not changed his views on the effectiveness of the craft. He is already on record before the house committee on naval affairs as strongly opposed to this type of marine defence.

Engineer of London says: "A list of foreign ships for the coronation review is as follows: Argentina, Presidente Sarmiento (built at Birkenhead); Denmark, Herluf Trolle; France, Montcalm; Germany, Kaiser Friedrich III.; Italy, Carlo Alberto; Japan, Asama and Takasago (built at Elswick); Norway, Norge (built at Elswick); Russia, Pobieda; Spain, Emperador Carlos V.; Sweden, Oden; United States, Illinois. The United States will have the best ship in this batch, while the Asama and Pobieda probably tie for second place, with the Kaiser Friedrich as a close third.

An exhibition of the Holland submarine torpedo boat Adder, the first of this type of vessel to be built for the United States government, was given last Saturday afternoon on the Potomac near Washington. The trial was under the auspices of the Holland company and the Adder was commanded by Capt. Cable. The exhibition consisted of a submerged run of ten minutes, at the end of which time the green, cigar-shaped craft poked her nose out of the water for a moment and dived again, making a prolonged run beneath the surface. At the end of the submerged run the Adder executed a series of porpoise dives, demonstrating her maneuvering abilities.

A dispatch from New London says that the Eastern Ship Building Co. has established a system of apprenticeship which will become operative immediately. Under it every apprentice will be indentured for three years, the period being divided into terms of six months each. The compensation will be sufficient to make him self-supporting, and at the end of three years of faithful service he will receive his certificate of apprenticeship, and henceforth be rated as a journeyman mechanic. Each apprentice will be assigned to the department for which he appears to have especial talents, and he will be given preference over improvers and helpers. He is guaranteed every opportunity, consistent with good discipline, to get full time and pay each week.

A very fast yacht, built to the order of Col. McCalmont of London from designs prepared by Messrs. Cox & King, was launched last week from the yard of Yarrow & Co., Poplar. This yacht is of very special design, being built on the lines customary with vessels of the torpedo-boat class and provided with turbine engines constructed by Messrs. Parsons, fitted with three shafts and three propellers on each shaft. As regards the hull and boilers the yacht is identically like a first-class torpedo boat, the boilers being of the Yarrow type; therefore the trials will be watched with interest, as forming a fair comparison with those of similar vessels provided with boilers of this class but fitted with reciprocating engines, the machinery being the only portion of the vessel in which it differs from a Yarrow first-class torpedo boat.

The chamber of commerce of New York has adopted resolutions asking for federal investigation and legislation to regulate the towing industry with a view of preventing accidents resulting from the towing of several deep-laden barges on one line in the coastwise traffic. The resolutions recite a number of recent accidents involving loss of life and declare that it is the opinion of the chamber that the entire matter of ocean towage is of such importance as to call for the consideration of congress with the view of taking such action and enacting such laws as will limit the number of barges in one tow. The resolutions also speak of the necessity of ordering such a shortening of tow lines and spaces between the barges when they approach the coast or enter harbors or rivers or other inland waters and sounds as will minimize the risk attendant on such towing.

The requiem of the old receiving ship Vermont was sounded in a telegram sent by Commandant Barker of the Brooklyn navy yard to the secretary, in which he said that the old receiving ship had been towed out to sea, presumably with the intention of turning her over to her purchaser, L. E. Hunt of Melrose, Mass. The latter has taken her up the coast, and without loss of time or sentiment is tearing her to pieces for the old junk there may be in her frame. As a matter of fact, the old hulk permits of no sentiment. In the language of the track, she was "a bad actor" from the time she left the stocks. If inanimate objects can be credited with a purpose, it would almost seem that during her only experience at sea during the civil war she did her best to drown every man on board and was only prevented by unusual seamanship on the part of her commander. Since that time she has done nothing more worthy than to accumulate disease germs, finally becoming such a menace that a year ago she was condemned and, after considerable haggling, sold.

TRADE SMOOTH-ON IRON CEMENTS MARK

SMOOTH-ON

will make a leaky casting steam tight, and the way it cures such defects as blow holes, shrink holes and other common blemishes is a revelation.

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is not a mere filling. It is a dry, metallic composition, which, upon being mixed with water, becomes a hard metallic iron that is insoluble in water, petroleum or other oils, that will stand an intense heat; and the expansion being the same as iron, is why it is sometimes called Magic iron. When applied to a blemish in a casting by a skilled mechanic, the blemish is removed.

Hundreds of breaks or fractures in Hydraulic machinery, leaks in connections in steam or water work have been permanently and cheaply repaired with Smooth-On.

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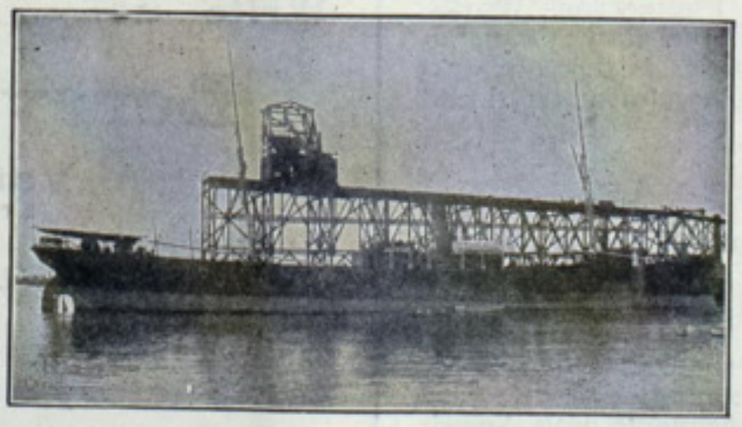
engineers, steamboat engineers, ship builders and by the U. S. Navy in place of white and red lead and iron borings.



We are analytical chemists--- water, oil, iron, etc.

SMOOTH-ON IRON CEMENTS

Unequaled for Boiler Patching and Stopping Leaks of Steam, Water or Oil.

S.S. "Santuit,"
Norfolk, Va., Jan. 16, 1901.
H. B. Saunders, Esq., New York, N. Y.

Dear Sir:—In answer to yours of January 4th, I wish to state that Smooth-On Compound is the very best cement that I have ever used, and I can safely say that had I been without it I could not have continued with boilers without considerable interruption; and furthermore state that during my experience of 30 years in ships of several nations, I have never found anything to equal it, and I can without hesitation safely recommend it to any one that is troubled with leaky boilers, as I am positive that if they give Smooth-On Compound a fair trial they will receive the same good results from its use that I have.

Yours faithfully,
A. CARLSEN, Chief Engineer,
S.S. "Santuit," Norfolk, Va.

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547-549 COMMUNIPAW AVE., JERSEY CITY, N.J. U.S.A.
VREELAND TOMPKINS, CHEMIST AND MANAGER.

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The Only Marine Directory

THE MARINE REVIEW publishes annually the

Blue Book of American Shipping,

the only marine directory in the United States. This directory is now in its seventh year and has increased steadily in patronage and in strength. Every bit of statistical information of a maritime character which is collected during the year in this office finds its way into the Blue Book.

Every ship builder, marine engine and boiler builder, ship owner, naval architect, marine engineer, and, in fact, everyone whose business is with ships is mentioned in the Blue Book and his address given. The aim has been to make it a complete working directory of the marine trade of the United States. With its aid you may reach anyone connected with this great branch of industry.

Its statistics of waterborne commerce are thoroughly reliable. The section devoted to the commerce of the great lakes with its iron mines and their output, its coal trade and dock facilities, its grain trade and elevators, its ships and their owners, is very thorough and absolutely authentic.

The rear pages of the Blue Book are devoted to a BUYERS' DIRECTORY of the MARINE TRADE—that is a list of manufacturers of ship yard equipment and ship supplies, arranged under the titles of the articles which they make, for the benefit of the buyer, who is usually the ship builder or ship owner. By ordering a copy of the Blue Book in advance your name will be inserted in the Buyers' Directory under various headings suited to your business without extra charge. The price of the Blue Book is $5.

If you decide to advertise your output in the Blue Book your name will, of course, be inserted under the various headings of your business and you will receive a copy of the book free. The advertising rates are extremely low and are as follows:

Full page $75; Half page $40; Quarter page $25;
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Marine Review Pub. Co.

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"PRESERVO" WILL NOT CRACK, SCALE, FREEZE OR STICK—SEE PAGE 8.

SKETCH OF MR. JAMES GAYLEY.

The New York Evening Sun contains the following sketch of Mr. James Gayley, first vice president of the United States Steel Corporation and in direct charge of the corporation's department of iron mining and transportation, which includes the operation of the iron ore railways and the great fleet of lake vessels: "One of the new men elected to the board of directors of the United States Steel Corporation is James Gayley, who, since the formation of the corporation, has acted as its first vice president. There are few in the steel and iron industry so well known. He is a scientific metallurgist, and judges metals and ores with a perfect knowledge, the result of earnest study and long familiarity with their use. He began his education at West Nottingham academy, Cecil county, Maryland, and completed it at Lafayette college, where he was graduated in 1876 with the degree of mining engineer. His first active work was done as chemist for the Crane Iron Works at Catasauqua, Pa., at a salary of $500. He spent three years with the Crane company, going from there to the laboratory of the Missouri Furnace Co. at St. Louis, eventually becoming superintendent of the works. He came east later and was engaged to manage the blast furnaces of the E. & G. Brooke Iron Co. at Birdsboro, Pa. It was in 1885 that Mr. Gayley first became connected with the Carnegie interests. He was placed in charge of the blast furnaces of the Edgar Thomson Steel works, and directed his efforts with great success to instituting economies in all the departments. He introduced many furnace appliances, saving time and money. His energy and ability was appreciated and rewarded, and he was made general manager of the Edgar Thomson plant. He was promoted later to managing director of the Carnegie company, then became first vice president of the United States Steel Corporation, and he is now one of its directors. Many useful appliances have been invented by him in connection with American blast furnaces, bronze cooling plates and carbon bricks for furnace lining, and he has also perfected and patented a process for producing a dry-air blast. He has invented an auxiliary casting stand for Bessemer steel plants, which enables two converters to do the work formerly done by four."

LORD BRASSEY DISCOUNTENANCES ALARM.

Lord Brassey made an address along industrial lines before the annual meeting of the London chamber of commerce last week. In this address he urged the improvement of the London docks on the lines of those at New York and Hamburg and said that he believed that the British, on even terms, were well able to hold their own in industrial struggles, proof of which he asserted was furnished by the fact that the exports per head of Great Britain were nearly double those of the United States. Dealing with the shipping combination, Lord Brassey said that it was idle to expect or claim a monopoly of the North Atlantic. It was certain, sooner or later, that some movement similar to that initiated by J. Pierpont Morgan would be brought about by the United States.

"Let us not lose our national dignity in unavailing and groundless alarms," the address continued. "Our position as a maritime nation is assured beyond the reach of competition, and we shall hold our position against all comers, because we build ships more cheaply, and, with or without foreign crews, sail them more cheaply than any of our rivals."

Lord Brassey admitted, however, that British ship builders must look to their laurels in the construction of ocean greyhounds of the type of the Deutschland, and he urged more liberal subsidies for mail carrying. He concluded by referring to the desirability of an imperial customs union, though he pointed out the great difficulties in the execution of such a plan, and by touching upon the increasing friendship between Great Britain and the United States.

BRITISH EXPORT COAL TRADE REVIVING.

It would appear that the British export coal trade is recovering from the temporary check which it experienced in consequence of the imposition of an export duty of one shilling per ton. The shipments in April were 3,661,691 tons, as compared with 3,653,073 tons in April, 1901, and 3,448,517 tons in April, 1900. The following were the largest exports of the month under review:

Country.	April, 1902. Tons.	April, 1901. Tons.	April, 1900. Tons.
Germany	598,524	633,631	552,576
France	621,915	698,029	651,591
Italy	486,891	439,843	374,058

The aggregate exports for the first four months of this year were 13,280,079 tons, as compared with 12,973,124 tons in the corresponding period of 1901, and 13,723,262 tons in the corresponding period of. 1900. The largest exports were:

Country.	1902. Tons.	1901. Tons.	1900. Tons.
Germany	1,577,393	1,546,152	1,654,046
France	2,444,715	2,722,789	2,851,652
Italy	2,064,978	1,797,570	1,736,910
Spain	963,246	967,024	885,568

The compound marine engines, both fore and aft and vertical tandem, as built by Marine Iron Works, station A, Chicago, have met with considerable favor on the Atlantic and Gulf of Mexico coasts, that company having built eighteen sets of them for those waters so far this year. 4

Wanted—Position by Sub-Marine Diver.

Permanent position wanted by practical experienced submarine diver. Address Box 29, Marine Review Pub. Co., 39-41 Wade Bldg., Cleveland, O. June 12.

BELLEVILLE GENERATORS

Grand Prix 1889 Hors Concours 1900
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Number of Nautical Miles made each year by Steamships of the Messageries Maritimes Co., Provided with Belleville Generators—Since their Adoption in the Service.

Year.	Australien	Polynésien	Armand Béhic	Ville de la Ciotat	Ernest Simons	Chili	Cordillère	Laos	Indus	Tonkin	Annam	Atlantique
1890	67,728	2,460										
1891	68,247	68,331	204									
1892	68,247	68,403	69,822	23,259								
1893	68,379	68,343	68,286	68,247								
1894	68,439	68,367	68.574	68,439	37,701							
1895	68,673	68,766	68,739	68,808	40,887	28,713						
1896	69,534	92,718	69,696	69,549	62,205	63,153	40,716					
1897	68,250	69,606	92,736	69,555	62,235	76,110	63,357	43,146				
1898	70,938	69,534	69,552	69,597	62,526	63,240	63,240	62,553	63,954	22,707		
1899	69,534	69,615	67,431	90,405	60,246	62,778	62,868	52,344	54,855	44,007	22,884	
1900	69,534	67,494	69,744	69,564	61,719	62,382	62,502	51,471	53,373	62,016	63,066	52,140
1901	44,220	69,627	69,594	66,948	51,057	62,460	62,490	61,743	62,688	43,866	62,466	63,126
Total	801,723	783,264	714,378	664,371	438,576	418,836	355,173	271,257	234,870	172,596	148,416	115,266

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